

AMERICAN SURVIVAL GUIDE

10 NATIVE AMERICAN SKILLS FOR MODERN SURVIVALISTS

**Firearm
Retention
Tactics**

Best Burn
Tinder Kits
Head-to-Head

**What's in
Your Pack?**
Everyday
Carry Gear

11 Arid
Edibles

**Proven
Handgun
Techniques**

DIY

» **Water Filter**
» **Solar Oven**

**Best Home
Defender:
the Shotgun**

**Life-Saving
Knots**

Apocalypse When

HOW WILL
YOU
SURVIVE?

GEAR GUIDES

**11 MUST-HAVE
CARRY-ALLS**

**12 FIRST AID
KITS FOR
ON THE GO**

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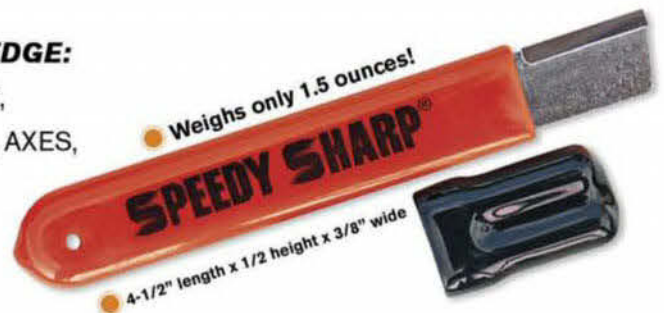
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THE COVER:

With the world laid to waste, life must continue to survive. Our intrepid traveler braves the barren landscapes in search of water, food, shelter, and the scraps of civilization. The shemagh courtesy Battlbox; the Brunton 60M compass courtesy CampingSurvival.com; the LifeStraw Go 670ML water bottle courtesy LifeStraw; the Patrol backpack courtesy Hazard4; and the Frontier SCHF38 knife courtesy Schrade.

Photo: HENRY Z. DEKUYPER
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Ryan Lee Price
rprice@EngagedMediaInc.com



Hobo Signs and Humanity

DURING THE GREAT DEPRESSION in the 1930s, nearly one-third of the country's people were out of work, and some of those that lacked any stable home (and those that completely lost theirs), took to rails and roads, traveling the country to look for food, work, and hope for the future. They became America's army of wanderers, not affiliated with anything in particular except as a physical reminder of hard times. Hobos, tramps, drifters, transients, vagabonds, everyone was one bank failure from joining their ranks.

From a 21st century perspective, we can look back on these times with a mixture of awe and romanticism, that there was almost a glory and idealization in the freedom and wanderlust found among the transients of the time, but the threat to family and home — not to mention the immense instability of the country's economy — was very real and very scary. People couldn't feed their families, and all aspects of life took a skewed priority of a day-to-day existence. Unpredictability ruled the land, but there existed a certain comradery, evidenced by signs, scribbles on fences, door jams, and sidewalks around town that pointed later drifters toward sources of food, alcohol (during Prohibition especially), and away from trouble, like the police and areas unsafe for vagabonds (see accompanying art).

The use of signs wasn't widespread, mostly found in the South, starting after the Civil War, but the phenomenon is interesting. And it poses a valuable question: Would today's society, if suddenly thrown into a similar situation as the Great Depression, where millions were homeless or out of work, develop a communication system bent on clandestinely helping each other survive? Would you, for example, leave a trail of clues in the forest for a stranger to follow that would lead him to some hidden resources — such as food or a source of water — or would you keep it a secret for yourself alone? In the last 80 years, has humanity been broken? Have we, as a society become selfish and self-centered enough that we have forgotten how to help people in need? I hope not.

Hobo signs are a shining example that survival doesn't have to be a solitary experience. Even though the hobos of the 1930s are stereotypically depicted in the movies as lone wanderers riding boxcars into the sunset, we are social animals and require the comforts of a group dynamic, then and now.

It is difficult to presume, however, but I'd think hobo signs of the future will be an app of some kind. Like geocaching or Yelp, you could log on and find 21st century hobo signs for various things near your location. Pin points for free food, a place to sleep, clean water, a local Salvation Army center would spring up on a map populated by people who have passed through the area before you.

Hobo signs, and whatever form of communication we may use in future emergencies on the scale of the Great Depression, are evidence that hopefully humanity will always offer a helping hand, regardless of the situation. ■■■



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by Cody Lundin

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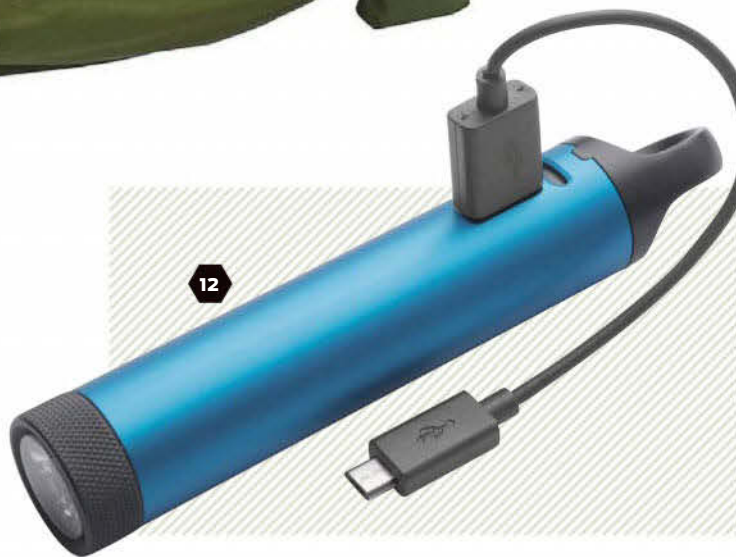
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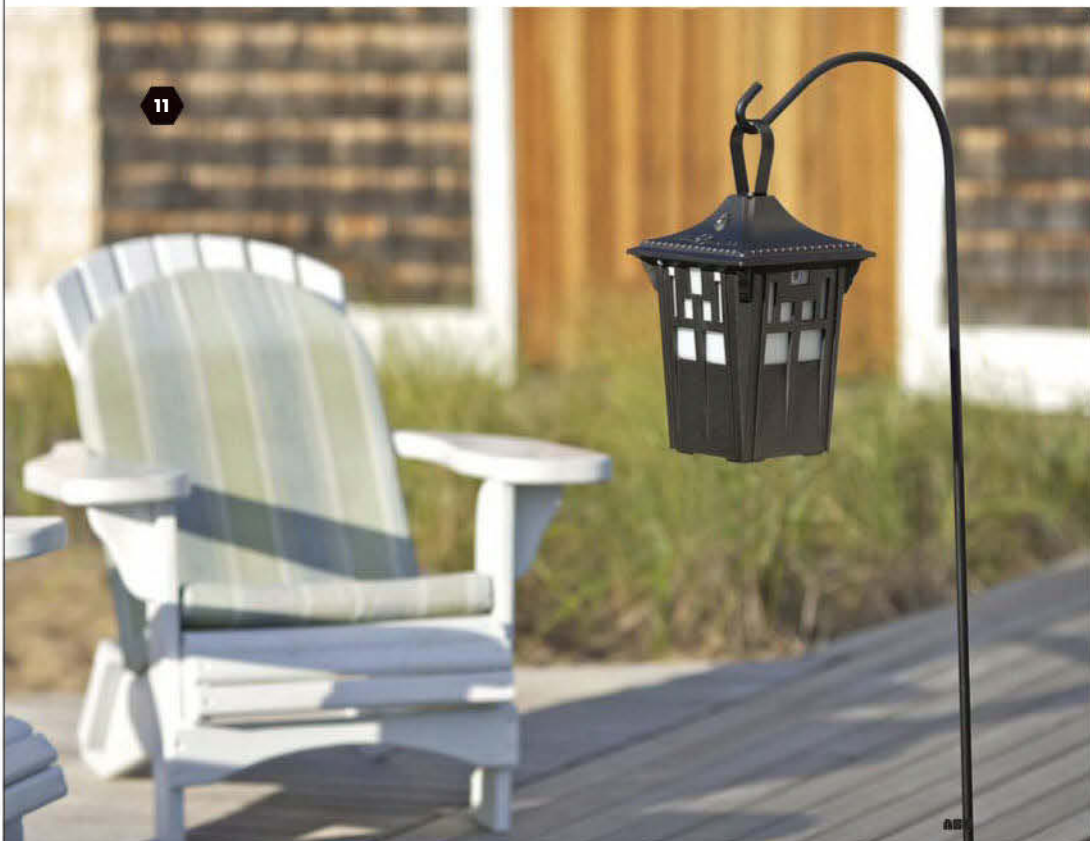
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PREPPING WITH RALSTON

BY TIM RALSTON

Timothy Bryan Ralston is an American inventor, veteran, adventurer, author and movie consultant for his expertise in the field of survival and preparedness education. He is best known for his appearance in the powerful motivational film, *The Compass*, and for being the international spokesperson in the launch of NatGeo's No. 1-rated program, *Doomsday Preppers*.

Mind, Body, and Soul

Why Nature is the Best Remedy for Stress

👉 These days people seem to be more stressed than ever. On top of work, family, and life in general, another stress prevalent in our society is technology. What is commonly known for its convenience also has its downfalls. Social media, commercials, pop culture, texting, pressure to keep up with the latest products...we are constantly bombarded by "noise" and stimulation (thank you cell phones). Some may not realize it, but this can actually cause inner tension, having a negative effect on your well-being.

*"Look deep into nature and then
you will understand everything better."* —Albert Einstein

Fortunately there is a remedy, and it is not pharmaceutical. In fact, the best rejuvenation lies within nature. Feeling stressed? Then it's time for you to go camping. Climb a mountain. Explore the woods. Unplug from that technology. There is no better relief from life than the natural splendor of the great outdoors.

Below are the reasons why you need to put down the iPad and get out into the wilderness.

Clears Your Mind

The sounds of silence can be incredibly soothing for your mind. And out in nature it's a different kind of quiet than in your home...it's genuine. The only noises to be heard are those of the Earth and those of your making. This kind of calmness induces relaxation, helping alleviate your stresses, and centers your mind.

In addition, honing in on your primitive skills is also an excellent



revitalization of your mental health. Most people are used to juggling 1001 tasks at a time, along with getting what they want at the drop of a hat. In the wild your main focus is simple: survival. And there is nothing more rewarding than achieving it on your own.

Builds Your Body

It's common knowledge that exercise is an excellent stress reducer. Save your monthly fees to the gym and forget about those expensive machines, because the wild is the ultimate gym

just begging to be utilized. Hiking, swimming, and even chopping your own wood can provide a good workout, all while enjoying the pleasures of nature.

Lifts Your Soul

Often we get caught up in the daily grind, forgetting that our world is full of beauty just waiting to be discovered. Taking the time to enjoy what Mother Nature offers can be an eye opening experience. Whether it's the view from a mountain peak or the sighting of an animal you've never seen before, sometimes it's the natural things that can be most uplifting to the spirit.

Lastly, the wilderness is the perfect setting to enjoy the one's you love. Without all of the distractions of technology and other "noise," it allows you to really spend quality time together...and nothing is better for the soul than that. **ASG**




One Gun... 12 Calibers

NATIONAL GEOGRAPHIC



AS SEEN ON: H2

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NEWS&NOTES



PHOTOGRAPHY COURTESY OF CDC

WMD LAW IN NEW MEXICO

YOU CANNOT USE or threaten to use a weapon of mass destruction, according to federal law. And now, states have created their own laws regarding WMDs, including California, New York, and Kansas. New Mexico is also working a new bill through its senate that would make using, producing, developing, or transferring chemical, biological, radiological, or nuclear weapons a crime there as well.



PHOTOGRAPHY COURTESY OF CDC/DR. VIR. DOWELL

Bubonic Plague and Fleabites

A STUDY BY the University of North Carolina has contradicted how bubonic plague works. It's long been believed that "bacteria that cause the plague take over host cells at the site of a fleabite and are then taken to the lymph nodes, where the bacteria multiply and trigger severe disease." But the UNC School of Medicine's researchers found that the bacteria don't use host cells; rather, they travel to the lymph nodes only, and not in bulk. Often, the bacteria get trapped within the skin or the node; only a few succeed and cause the disease. "Anytime you find something where the host is winning, you want to exploit it," said Virginia Miller, professor of microbiology and immunology, and senior author of the paper. "If we can understand how the host and the bacteria contribute to this bottleneck, then this could become something we'd target so we could either ramp up what's causing the bottleneck or slow down the infection."

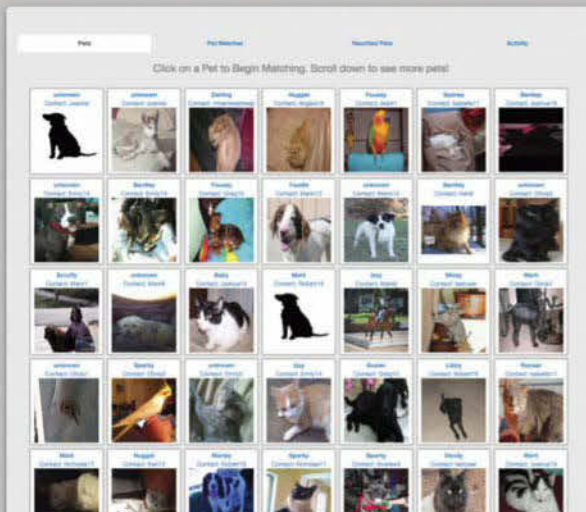


“The lone-wolf kind of attack, that threat to our homeland, the United States of America, has never been greater.”

— FORMER CIA DEPUTY DIRECTOR MICHAEL MORELL TO NEWSDAY, IN REFERENCE TO AL-QAEDA AND SIMILAR GROUPS THAT UTILIZE THE INTERNET TO PUSH FOR ATTACKS ON THE WEST

emergencypetmatcher

What is EmergencyPetMatcher?



Website for Pet Owners, Post Disaster

Over at the University of Colorado, Boulder, a new website has been created by computer scientists to help reunite pet owners and their pets following a disaster. [Emergencypetmatcher.com](http://emergencypetmatcher.com) allows you to create a notice of lost or found pets, and based on votes related to matches, an email is then sent to the people who both posted lost/found and suggests they get in touch. The tool will be active during the next disaster.



\$40 Million for Microgrid Competition

NEW YORK CITY'S Governor Andrew Cuomo has created an energy competition called NY Prize involving creating microgrids — local energy networks that are separate from the larger grid during any kind of emergency or weather-related incident. Microgrids can use solar, wind, hydro, or combined heat and power systems. It's a \$40 million competition.



Meet Your New Fear: MegaDrought

THANK CORNELL AND NASA researchers for this revelation: A megadrought may be in our future. According to their findings published in *American Association for the Advancement of Science*, a megadrought could last three decades, with a high risk of it happening in the Southwest and Great Plains. "Hurricanes and tornadoes are natural hazards," explained Toby Ault, Cornell associate professor of Earth and atmospheric sciences, to the *Cornell Chronicle*. "A megadrought is a natural hazard, but it unfolds slowly — over a period of decades. It's just another natural hazard and one we can manage." Like, by lowering greenhouse gases over the next 10 years.

Do You Know Where the CHEMPACK Is?



THE CDC HAS a Strategic National Stockpile CHEMPACK program. CHEMPACKs are deployable containers of nerve-agent antidotes. But since stockpiling or delivery could take too long since timing is critical, there are 1,960 CHEMPACKS placed throughout the country, with more than 1,340 locations (mainly in hospitals and fire stations); every state, territory, island jurisdiction, and District of Columbia has this, according to the CDC, which also noted that more than 90 percent of the U.S. population is within an hour of a CHEMPACK location, allowing first responders to act quickly.

Obama Creates Cybersecurity Office

IT'LL OFFICIALLY be called the Cyber Threat Intelligence Integration Center and will be handling cyber security threats and hacking attempts related to terrorism intelligence. President Obama has put it under the umbrella of the Director of National Intelligence and the order is to "connect the dots" for malicious foreign cyber threats or anything potentially affecting U.S. national interests.

DUTY CALLS

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FOUND ALIVE

TEACH THE SKILLS NECESSARY TO SURVIVE A LOST-CHILD SITUATION

Story and Photography by **Kevin Estela**

“Where’s my child?”

This scenario is every parent’s worst nightmare. A parent’s protective instincts are not comforted by the unknown. For a small percentage of parents, this scenario will play out in reality as children may wander away, lured by their curiosity or thrust into emergency situations through no fault of their own.

“Lost-proofing” children requires a cognizant effort from both parent and child, and children can play an active role in their own safety too. Children can be taught to recognize the signs leading up to an emergency, and adults can prepare them with the skills and equipment to address them.

"ONLY BY THINKING
ABOUT THE WORST CAN
WE PLAN FOR IT."





At a young age, the author learned to direct sunlight toward objects by reflecting it off his watch face. Signal mirror concepts and skills are quickly picked up by children.

BE PROACTIVE ADULTS

The worst case scenario is hard to process as adults because it is highly emotional. Only by thinking about the worst can we plan for it. This may mean taking photos of the treads on your child's shoes. It may mean establishing a phone chain of who you need to contact for assistance. Whatever you feel is necessary is better considered before anything happens than in the middle of it. These actions create a bubble of safety that will keep your loved ones safe but will make your actions seem overprotective by those who don't share your mindset. If your child's safety is worth more to you than what others think of your actions, none of these measures take safety too far.

The first step in lost-proofing a child starts with being a responsible adult. Adults must have plans in place to account for a child's whereabouts. Know their abilities and preparedness by playing an active role in their life and encouraging them to develop good habits such as awareness.

"IF YOUR CHILD'S SAFETY IS WORTH MORE TO YOU THAN WHAT OTHERS THINK OF YOUR ACTIONS, NONE OF THESE MEASURES TAKE SAFETY TOO FAR."

HOW TO THINK ABOUT STRANGERS

In "Protecting the Gift" security expert and author Gavin De Becker suggests children be taught not to seek out a policeman but a woman for help instead. De Becker explains how children see the world from a shorter point of view and may confuse a security guard (or anyone in uniform with a badge for that matter) for a policeman. In a crowded mall or at an amusement park, not all strangers are "bad people." Females, according to De Becker, will be the better choice in asking for help. I suggest children be taught some basic ways a true threat can take advantage of them. Just as many are taught, "don't take candy from a stranger," you must also let them know candy is not always the gift, and other incentives to comply with a stranger will sound too good to be true. Teach children to trust only those you have vetted. Children should know they are responsible for their safety and they should learn not to give out sensitive information (home address, phone number or presence of an alarm system) that could hurt them or their family.



Children can be taught to follow directions in more ways than one. In an emergency, providing basic directions such as “follow the path east to get home” and having the tools to navigate could prove invaluable.

Since children typically spend more time in urban/suburban areas than the deep woods, encounters with human threats are more likely than animal threats in the great outdoors. In wilderness settings, avoiding strangers in an emergency can be the difference between life and death. Should a ground rescue be underway, a child may view a search and rescue volunteer as a stranger. They wear bright clothing, have lights and radios and can look intimidating to a child. A small child may mistake all the extra equipment they carry as “monster-like” and may be frightened they are calling for them by name. Children should learn, it is good to cry out for help and there is safety in numbers.

SEEK SHELTER

Children often follow the S.T.O.P. principle (Stay Put, Think, Observe, Plan) better than adults. Rather than wandering around, children tend to stay put naturally. If they are prepared, they can wait in this manner for as long as necessary. Children are often helped by instinctive survival behavior during emergencies. When they get cold, they huddle down and when their awareness kicks in that something feels out of place, their “stranger danger” defense mechanisms take over and they may run from danger.

Children also see the woods differently than full-grown adults. We may tend to bypass a natural shelter, whereas children will exploit the smallest of spaces. When sheltered in place, children reduce the chances of getting injured and limit the search area where professionals will be looking. It is the parent’s job to let them know the importance of staying put when lost. If the child remembered to communicate their



PHOTO BY THINKSTOCK

Survival Awareness Games

Children must rely on their strengths for survival. Pound for pound, a child cannot overpower an adult. Mentally, children do not have the same schooling or lifetime of experiences to fall back on intelligence the way an adult can. Children can be quick and they may have good stamina but something they can develop at an early age is awareness. A child can use awareness to solve survival problems and it is the obligation of their guardian/mentor to develop these skills through exercises and games.

Children love binoculars and the power of magnification. To a child, the outdoors is an infinite space. Give them a way to focus on a small area and ask them what they see. Tell them to use a magnifying glass to identify the spots on the underside of St. John’s Wort, have them use their hands as “blind-ers” to survey the landscape for conifer tree patches, use those binoculars to differentiate between various black birds. When children learn to use their eyes to detect little nuances, they sharpen their skills of detection.

Children tend to have very keen senses. Ever see a child smell something first before they eat it? Let chil-

dren smell certain woods to identify cedar from oak. Let them smell tobacco from a distance and see how far they can pick up the scent. Give them a blindfold test of various camp foods and see how discriminating their sense of smell really is. Of course, if a child is really young, monitor what they smell so they don’t put something poisonous or toxic in their mouth out of habit.

A great awareness game is to play hide-and-go seek with an animal call and camouflage. This is best done with one adult hiding and another adult walking side-by-side with the child. A (turkey, goose, duck, moose) call is made and the child must follow the sound. With older children, this game can be played in a large field at night. For an advanced challenge, the adult can use darkness to move about a few times before settling in place letting the seeker find you.

There are many creative ways of helping build the awareness skills of children. If a child is able to identify a good shelter, the right wood, sources of food, signs of life and assets in the field, they are on the right track for increasing their survivability.



A young girl examines the contents of her school-legal emergency kit.

A CHILD'S FIRST KNIFE

A child must learn to respect a knife and demonstrate maturity around it before they can be trusted with one. An adult can help the child learn this respect through gradual steps and the slow integration of knife culture into a child's life.

Children can start by respecting "toy" knives. We don't want children to develop bad habits and accidentally cut anyone with their first real knife. This is part of the learning process and should be closely followed. I also believe in establishing respect for "dad's knife" or a parent's knife. Children must know real knives can cut and they should see how an adult handles a knife.

At some point, a child should be given a chance to use an adult knife but it shouldn't be whenever they want. The adult should maintain

control of when it is allowed and the child should learn they are always earning your trust. Denying them use of a knife can build frustration, but in the long run it builds respect when they receive their own blade.

When a child finally is ready, based on your judgment of their maturity, give them a real knife with a true sharpened edge. Monitor children for safe cutting techniques and only allow them to use the knife in your presence.

At some point, slowly remove the restrictions but make sure they know their knife can be taken from them at any time. Remind them that respect and responsibility for the knife never ends. Let them develop pride for their gear and foster their understanding of the blade through quality time in the field.

Children should be trained to handle knives when they are mature enough, based on discretion. The kit you carry is useless if you are the only one who is capable and trained to handle it.



Whistles are cheap and easily carried on a jacket zipper pull. They are much louder and the sound travels farther than adult cries for help. Every child should have a whistle on them and be instructed by adults when they should responsibly use it.



Take the fear away from an unexpected night out by providing a child a lightweight crank radio. Teach them to stay put and wait for help.

destination and course of travel, it is only a matter of time before they will be found. However, children are not vigilant at all times and they miss the signs and may not pick up on external clues in light of outside influences. Peer pressure, attractive distractions, and naiveté work against their ability to stay out of harm's way. Therefore, it is wise to equip children with a kit they can carry with them to stack the odds in their favor should an emergency arise.

GIVE THEM SKILLS

Children can be taught how to use signal mirrors or other reflective devices to reflect rays of sunlight. For most rescues, ground resources will be utilized before aerial. While a whistle can be recognized easier in a dense forest than a reflection of light, reflective signaling is an excellent skill to put in your child's tool box.

The childhood story of Hansel and Gretel featured a trail of breadcrumbs to mark the way the two storybook characters traveled.

Teach your children to make cairns (rock markers) on your path or bend branches to expose lighter-colored undergrowth. Make sure they know their surroundings.

One scenario that must be examined is the injured parent. Introduce your child to your personal kit and what you carry as an adult. Don't "hide" knives or other tools normally reserved for adults as your child may be the one who needs to use it while you



are incapacitated. Give them the confidence and self-esteem to act like an adult when it's needed. This "big kids table" initiation inspires confidence in children to act like an adult and it grows the bond between parent/guardian and child.

Lost-proofing is more than warning a child and giving them some basic emergency supplies. Lost-proofing means folding children into the world of adult survival skills in a kid-friendly way. The delivery can be difficult given the grave circumstances of failure. However, children are capable of survival tasks and extraordinary feats of willpower, doggedness and resolve. By taking an active role parenting and fostering survival skills, we help lost-proof the next generation of outdoorsmen and prevent living the nightmare of not knowing, "Where's my child?!" **ADD**

A space blanket provides protection from both wind and rain while reflecting body heat back to the user. Paired with hand warmers, this item can save a child's life.

HAVE AN EVERYDAY KIT

The child's emergency kit will be different from its adult counterpart. Many of the items are appropriate only when the child reaches a certain age and maturity level. There is no reason a child should not have these items tucked away while touring an amusement park, skiing or even at school. The contents of the kit will vary depending on the child's age, maturity and physical ability:

1. I.C.E. (In Case of Emergency) card
 2. Whistle
 3. Emergency blanket
 4. Hand warmers
 5. Squeeze (LED) flashlight
 6. Candy
 7. Chemical light stick
 8. Pocket first-aid kit
- Optional: pre-paid cell phone

Since children are told to always ask for help and they are quick to signal when something is wrong, give them the tools to do this. A whistle can be carried on a zipper pull or key chain and the sound can be heard much farther than the average adult cry for help. The In Case of Emergency (I.C.E.) card should have the child's communication information necessary to reunite him or her with their guardian after handing it off to a responsible adult.

A simple pocket-sized first aid kit can work wonders to boost a child's morale and confidence. How many times have you seen a child stop crying the minute a strip bandage is put over a small cut? Every child should be given an emergency blanket to wrap themselves in as well as hand warmers and chemical light sticks.

The emergency blanket provides reflective ability and blocks the wind. Hand warmers not only warm the hands but also provide additional warmth inside the emergency blanket. With an adequate wind break and a source of warmth, a child can spend a night in relative comfort sitting on top of their school backpack. With a cracked chemical light stick nearby, a child will be more comfortable sheltering in one location than wandering through the dark.

The child's kit should include some sort of nutritional treat. It improves a child's positive mental attitude and can take their mind off of their situation. If space is at a premium, a pad and pen or crayons can help them harness creativity to endure a night under a space blanket shelter.

FIREARM RETENTION

YOU BROUGHT IT, YOU LEAVE WITH IT

Story by **Joshua Swanagon** | Photos by Tanner Swanagon

IF YOU BRING A FIREARM into a situation you have a responsibility to maintain control of it at all times; you brought it, you leave with it. If you are going to carry a firearm for any reason, practice and continued training are important for ensuring your safety and the safety of those around you, but very few people consider training to retain their firearm during an aggressive conflict. This article will get you started on that path. But like anything, if you don't practice it, it will not work for you when you need it. When I was an officer, firearm retention was a very important part of our training and I still practice and refine it to this day.

CONSIDERATIONS OF FIREARM RETENTION

If you are carrying a firearm you probably already know this, but it bears mentioning here, if someone is going for your firearm it has become a deadly force assault and your response needs to be aggressive and decisive enough to meet the given stimulus. As with any self-defense or combative techniques you learn and use, you need techniques that are easy to do, easy to remember and will produce maximum effect with minimal time and effort. This is not a movie, it doesn't have to look good, it just needs to work.



AVOID HYPER FOCUS

In any kind of self-defense or combative scenario involving a weapon, whether it is your weapon or the attacker's, we tend to focus on the weapon to the exclusion of all else. Focusing on the weapon is a good idea, it is what keeps us alive, but remember you have other weapons at your disposal; hands, elbows, feet, knees, head, etc. Do not become so hyper-focused on the weapon that you find yourself struggling and wrestling over it, go ahead and disrupt the attacker with an aggressive assault using your other weapons while he is focusing on the primary weapon. If you find yourself struggling over the weapon you have to consider the possibility that he may be stronger, mistakes can be made no matter how skilled you are, he may have a buddy or buddies, etc. Anything can happen during the struggle that can be counter-productive to your defensive plan. You need to end the struggle immediately and with extreme prejudice.

KEEP IT TIGHT TO YOUR BODY

When you are fighting to gain or maintain control over any weapon, keep it tight to your body. You maintain better control, better leverage and more strength when you utilize your body.

Obviously, when doing this be careful to keep control of where the dangerous part of the weapon is oriented. You don't want to point the firearm at yourself or put the sharp or pointy parts of a knife against yourself. You just want to pull your arms in tight to maintain maximum control and possession of the weapon. When your arms are away from your body you maintain no leverage and they can be moved around easily and therefore controlled, when they are tight against your body they are very hard to manipulate.

WHAT IF HE LETS GO BEFORE I CAN FINISH THE TECHNIQUE?

I have been asked before "what happens if he lets go? These techniques won't work if he lets go." My answer to this is simple, if he lets go then my technique worked just fine. The whole point is to ensure that he doesn't get my firearm, if he let go then he didn't get my firearm. Again, this isn't a movie. I don't care if I don't get to finish a cool technique; I just want to go home safe and sound with my firearm still in my possession. Once he lets go, I step away and present my firearm and end the threat, ideally without incident. Success. »

FIREARM RETENTION FROM THE FRONT

» It may be surprising to know there are people who actually practice taking a firearm out of someone else's holster from the front. They even go as far as to practice taking firearms out of level three duty holsters and are quite good at it. Much like how you work hard every day to get better at your job, so do some criminals. For this reason it is important to constantly train to maintain a level playing field.

FIGURE 1A

I am maintaining a defensive posture, letting the aggressor know that I don't want any trouble. This will also demonstrate to witnesses that you are not the aggressor, which will show in the police report. I am also making sure to keep my firearm side away from him.

FIGURE 1B

The aggressor suddenly rushes me and grabs my firearm to un-holster it.

FIGURE 1C

I quickly and aggressively slam my hands down onto his hand and cover his hand with both of my hands; this will help maintain control of my firearm and potentially control of the aggressor. I want this to be very aggressive to foul his draw and disrupt his thought processes. From this stage on everything is very decisive, aggressive and fast. I do not want to give him a chance to recover his focus.

FIGURE 1D

I am continuing to cover and maintain my firearm while holding his hand down against my side; with my support hand I am digging my fingers into his eyes, grabbing his face like a bowling ball. I want to dig my fingers deep into his eyes, I do not want him to be able to see or function; I want his entire focus to be on what is happening to his face.

FIGURE 1E

I am going to aggressively drive his head straight down, forcing him to the ground. There is an old principle that where the head goes the body will follow, this is the case here.

FIGURE 1F

Once he is down, I am going to back away and present my firearm, ordering him to stay down. At this point the next steps will be dictated by the aggressor. Ideally you will be able to have someone call the police or call them yourself while maintaining control of the situation. Remember, if he is down and no longer aggressive you need to de-escalate, it will be hard because you will be experiencing an adrenaline dump, but if you shoot him at this point then you are the aggressor and will be treated as such in the eyes of the law and public perception. If he gets up and runs, let him go! Just get a good description of him for the police.





FIREARM RETENTION FROM BEHIND

» We live in a 3D world, threats can come from any angle and it can be hard to always maintain a 360 degree view of our surroundings, especially when there is any kind of external stimuli that competes for our attention. Scenarios such as that are prime opportunities for an aggressor to come up from behind and try to steal your firearm.

FIGURE 2A

I am currently distracted by some form of external stimuli when the aggressor sneaks up from behind.

FIGURE 2B

When I feel him grab my firearm I take a quick step forward, which will assist in fouling his draw.

FIGURE 2C

As in the first scenario, I slam my hands down onto his, ensuring that I have completely fouled his draw, gaining control of the situation and my firearm.

FIGURE 2D

As in the first scenario, I maintain cover on my firearm and his hand while my support hand grabs his face, digging deep into his eyes and driving his head straight into the ground.

FIGURE 2E

Once he is down, I am going to back away and present my firearm ordering him to stay down. As with the first scenario, at this point the next steps will be dictated by the aggressor. Ideally you will be able to have someone call the police or call them yourself while maintaining control of the situation. Remember, if he is down and no longer aggressive you need to de-escalate, it will be hard because you will be experiencing an adrenaline dump, but if you shoot him at this point then you are the aggressor and will be treated as such in the eyes of the law and public perception. If he gets up and runs, let him go! Just get a good description of him for the police.

"IF HE LETS GO OF YOUR FIREARM THEN YOUR TECHNIQUE HAS ALREADY WORKED. THE PURPOSE OF ANY FIREARM RETENTION TECHNIQUE IS TO ENSURE THAT HE DOESN'T GET YOUR FIREARM."

RETAINING A PRESENTED FIREARM

» There are a ton of firearm disarm techniques out there, just about every martial art or self-defense system has a series of them and you can bet that the same criminal element that practices taking your firearm out of your holster also practices how to take it out of your hands. The following technique is a principle that can be applied during many different types of disarms; the scenario does not have to be exactly like this, apply the principle itself to many different scenarios.

FIGURE 3A

During an aggressive, close quarters conflict I present my firearm as a last ditch survival effort (maybe he is far bigger and I am afraid for my life or the lives of my family, maybe I am becoming surrounded, etc).

FIGURE 3B

The aggressor grabs my firearm in an attempt to disarm me.

FIGURE 3C

I quickly and aggressively step forward and simultaneously suck my firearm tight to my body. This will give me a greater level of leverage, control and strength.

FIGURE 3D

You can see that when I pull the firearm in tight to my body I keep it oriented on him. I can shoot from this position if necessary; there is a shooting system developed by Paul Castle that utilizes this position called CAR (Center Axis Relock) that has been adopted by several top agencies.

FIGURE 3E

Once I have regained complete control of my firearm, I am going to drop the barrel down slightly and swing it to the outside of his hands and then I am going to rotate it up and over the top of his wrist. This will place his wrist in a very unnatural and painful position. During this step a well-placed kick to the knee/shin or head butt will help to distract him while you manipulate the firearm. Remember you have other weapons in this fight, use them.

FIGURE 3F

This is a view of what will be happening from the opposite side. You can see that his wrist has been turned over and placed in a very painful position. If I press down, it will lock his wrist and force him downward, he will be forced to either let go or follow the pain. It is very important to note that during this step I take my finger off the trigger so that I do not risk it getting broken if anything goes wrong, this will also prevent the firearm from discharging prematurely. Also, I have my thumb on the slide to help stabilize the firearm while using it to manipulate his wrist. Make sure that you move your thumb back down along the rail before firing; you do not want your thumb on the slide during discharge.

FIGURE 3G

Using the firearm to apply the lock I force it straight into him and down, forcing him to the ground.





FIGURE 3H

Once he is down, I am going to back away and present my firearm ordering him to stay down. As with the first and second scenario, at this point the next steps will be dictated by the aggressor. Ideally you will be able to have someone call the police or call them yourself while maintaining control of the situation. Remember, if he is down and no longer aggressive you need to de-escalate, it will be hard because you will be experiencing an adrenaline dump, but if you shoot him at this point then you are the aggressor and will be treated as such in the eyes of the law and public perception. If he gets up and runs, let him go! Just get a good description of him for the police.

CONCLUSION

Firearm retention is almost as important as being able to shoot accurately and safely, if you are going to carry a firearm you are responsible for that firearm at all times, which includes keeping it out of the hands of criminals. There are many different firearm retention techniques and I highly recommend researching and training in them to figure out which will work best for you.

Our ability to carry firearms in this country is a right, guaranteed to us under the second amendment. But make no mistake, there are those who are working diligently every day to exploit irresponsible gun ownership to garner public support for removing that right. In their eyes if you are carrying and a criminal disarms you and uses your firearm in the commission of a crime, you are as responsible as him, because if you weren't carrying in the first place then he would have never got it. You brought it, you leave with it, at all costs. The last thing you want is to watch the news and find out that your firearm was used in a homicide. **ARM**

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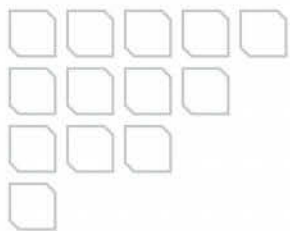
Ballast & Rappel II

KILIMANJARO'S LATEST MUST-HAVE MULTI-TOOLS

Story by **Simon Meyers** | Photography by Henry Z. DeKuyper

WHEN IT COMES TO MULTI-TOOLS, TOO MANY POTENTIAL BUYERS GET STUCK ON THE "MULTI" PART OF THE IDEA AND NOT ENOUGH ON THE "TOOL." A MULTI-TOOL WITH DOZENS OF TOOLS BECOMES CLUTTERED, BULKY, EXPENSIVE, AND DOWN-RIGHT OBNOXIOUS. THERE IS A FINE LINE BETWEEN FUNCTIONALITY AND SIZE, AND KILIMANJARO HAS FOUND IT WITH THE BALLAST AND RAPPEL II, TWO OF ITS LATEST MULTI-TOOLS.





► Ballast

CONSTRUCTED WITH RIVETS, the Ballast comes completely satin black (or silver) and displays a very rugged appearance. With 13 tools, the pliers are slightly smaller than the Rappel II and they're not spring-loaded. Each of the tools are easy to access. It comes with two serrated blades, approximately two-inches in length, one single and the other double cut. The knife blade, though thin, is about two inches long and doesn't physically lock.

The ancillary tools, screwdrivers, bottle/can openers, are compact but effective, although slightly difficult to extract from the body of the handle. The black satin finish offers a sleek appearance, and a few elements near the pliers lends itself to a futuristic feel. The straight design of the handles allows for a tight grip, while the handles fold down smoothly and easily.

The Ballast comes with a stiff nylon sheath with a webbing loop so it can be worn on a belt or attached to a pack. Because this multi-tool has a wide range of abilities packed into a small package (4.2 inches closed), it is a great value for those that need a variety of quality tools in one package.

» The Ballast is built to last with riveted construction and stainless steel. It comes in black satin or silver and contains a wide range of tools in a thin profile package. It is just over a half-inch wide. With its included pouch, the Ballast can be kept near for quick jobs.

PROS: Beautiful design and appearance. Great feel and strong construction, made from rivets. Comes with a nylon pouch.

CONS: Slim-profile Phillips screwdriver doesn't work well. Blades do not lock. Some of the tools are difficult to extract.

BALLAST COMPONENTS

- Pliers
- Wire Cutter
- Long Nose Pliers
- Knife
- Serrated Knife
- Can Opener
- Bottle Opener
- Saw Blade
- Double Cut File
- Single Cut File
- Phillips Screwdriver
- Medium Flat Head Screwdriver
- Large Flat Head Screwdriver
- Nylon Pouch



Ballast & Rappel II



» The green upper handle gives the Rappel II a fancy look that you won't easily lose if it were to be dropped. Although it has fewer tools than the Ballast, it does have features — such as locking blades, and snap-tight handles — that set it apart as a good buy.

Rappel II

There are two different versions of the Rappel line, and this is the full-sized one with the black anodized finish and 11 different components (compared to only eight on the Rappel — and one of those eight is a carabiner clip). Made from stainless steel, each black satin tool is tucked securely beneath the skeleton-like handles, the upper splashed with a neon green color. Top and bottom handles have jimping running its full-length, allowing for a more sure grip, especially when wet. Each tool snaps into place securely and takes quite an effort to push them back into place after being used. Both the saw and the three-inch knife blade physically lock into place.

The two flat-head screwdrivers are well suited to the task, but the flattened Phillips screwdriver only works well on certain screws with deeper heads. A can opener is a welcomed addition. The pliers are long, quite narrow, and include wire cutters. When fully open, the 6.5-inch tool's handles snap into place with a reassuring click.

Overall, it performs well under torque, and doesn't look likely to break or bend if maintained properly and used safely. Carried in the car, pack, or kept at the shop, it is a great tool for the money, and will be a valuable asset for many years. **ASG**

PROS: Each component's pivot is tight and solid. The tool is well made, beefy (9.5 ounces), and ergonomically fits well in the hand. Bright color is not easily lost. Pliers are spring-loaded.

CONS: The satin finish on the handles scratch easily. Flat Phillips screwdriver is awkward. No belt clip or pouch to carry it.

RAPPEL II COMPONENTS

- > Pliers
- > Long Nose Pliers
- > Wire Cutter
- > Knife
- > Saw Blade
- > Bottle Opener
- > Can Opener
- > Phillips Screwdriver
- > Medium Flat Head Screwdriver
- > Large Flat Head Screwdriver
- > File

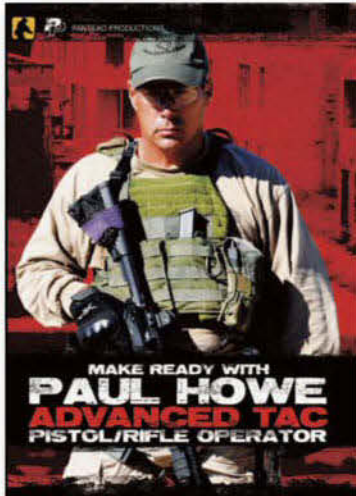


kilimanjargear.com | MSRP: Ballast, Rappel II: \$39.99/each



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THE SHOTGUN SOLUTION

MAKING THE MOST OF A HOME DEFENSE SITUATION

Story and Photography by **Bob Campbell**

A few years ago, a particularly dangerous burglar was active in my home city. More than one citizen awoke to see this sociopath at the foot of their bed, and since most burglars avoid breaking into an occupied home, it was obvious this man was extraordinarily dangerous. As is often the case in situations like this, firearms sales skyrocketed, and most of the firearms purchased were shotguns. Since the threat was perceived as invading the home rather than attacking people on the street, a shotgun was chosen.

The shotgun is seen as the all around problem solver for home defense. To an extent this is true but without proper selection, training, and forethought, the shotgun will be underutilized as a proper tool in defending your home and property.

The shotgun is easily the most effective among the common defensive sidearm. From the single shot shotgun to tactical models with extended magazines and AR-15-type stocks, the shotgun is widely used for home defense.

Some believe the shotgun has great deterrent value, and the racking noise of a new shell in the chamber is an unmistakable sound. A burglar motivated by profit may decide that “feet don’t fail me now” is a good option. For those choosing the shotgun for rural defense, there are plenty of deadly predators in the country, such as feral dogs, mountain lions, and other dangerous animals. →



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THE SHOTGUN SOLUTION



The shotgun dispenses a lot of power. It pays to test varying loads.



Every shooter must be certain to pattern their shotgun to confirm the pattern at various ranges.

CHOICES

When you choose a shotgun first have the mission in mind. Personal defense is terribly important, but a shotgun is a very versatile firearm.

The shotgun will take the smallest game- birds and squirrels and do it very cleanly. With different loads and choke tubes, medium game such as deer may be taken. Boar hogs and bear are not out of the question at moderate range with a slug gun.



The double barrel shotgun has been around a long time.



Self-loaders require dedication but as you can see the action soaks up some of the recoil.

Some duties conflict. As an example, a rifled slug bore shotgun often gives poor patterns with buckshot. Fortunately, most commercial shotguns have readily changeable barrels. A short open choke barrel for home defense and a long barrel with removable choke tubes for all around game shotgun isn't overwhelmingly expensive considering the versatility. Choke is simply the restriction in the bore and this squeezes the shot pattern to provide a tighter pattern. For example, a covey of quail that jumps up quickly demands an open, wider shot pattern, while a goose flying high demands a tight pattern.

For general home defense, an 18 to 20 inch barrel is ideal. This type of shotgun handles quickly. Single shot, double barrel and repeating shotguns each have merit, but you must consider how the shotgun will be stored. No one recommends storing the shotgun with a loaded chamber. This means the single shot and double barrel shotguns must be loaded before being put into service, while a pump shotgun need only be racked to make it ready. The Rossi line of affordable single shot shotguns is a standout, as they feature a transfer bar hammer system, which just might be the only single shot system that allows safe storage of the shotgun with the chamber loaded.

TRAINING AND PRACTICE

Whichever shotgun is chosen, extensive training is necessary. The user should practice quickly manipulating the action, loading and unloading the shotgun, and using the safety as well as speed loads. The typical defense situation will seldom require more than a few shells but I am aware of exceptions. It is important to be able to face a takeover robbery or home invasion with a full gun load. Some will wish to master quickly loading a slug to

address felons behind cover. At short range the shotgun must be quickly manipulated and aimed as carefully as a rifle. The pattern begins to spread to a useful degree at about ten yards. This is ideal shotgun and buckshot range. The pattern offers the possibility of several hits on the target but it is wide enough to ensure a hit on a moving target for those that have practiced. As the range increases the chances of a hit diminish and the surety

of an effective hit with buckshot is less. The individual must pattern his shotgun on paper to ensure they are aware of the pattern at likely combat distances. Learn if the pattern hits above or below the point of aim at seven, 10 and 15 yards. The Remington reduced recoil 12 gauge load will produce a pattern of about three to four inches at seven yards with its eight pellets. As range increases we should consider a slug load. As an example Wolf, an inex-

pensive buckshot load, produced a 23-inch group on paper at 25 yards. The Hornady Critical Defense load exhibited a 13-inch spread. Wolf is fine for practice but the Critical Defense load is indicated for critical use. When firing keep the shotgun tight into the shoulder and lean into the effects of recoil. The body should be forward over the hips. Learn to swing the shotgun into the target and quickly get hits.



The Remington 870 Tactical with synthetic furniture and extended magazine is a good all-around shotgun.

Double Barrel: The double barrel should never be discounted as an all around field-grade sporting gun. The double is also a capable personal defense shotgun. For example, I took my old Stevens 12 gauge double to the range and loaded it with Fiocchi's reduced recoil 12 gauge buckshot. At 15 yards the pattern from each barrel was perfectly centered on the front bead. Another surprise was that Fiocchi's Aero slug also struck to the point of aim, dead on the target using only the front bead as a reference. When walking in the field, I can keep the breech open for safety and instantly close it.

Pump Action: A pump-action shotgun is probably the best choice for most of us. With an 18- to 20-inch barrel and a magazine capacity of four to eight shells, the pump-action shotgun is simple to manipulate, reliable, and versatile. And while I stress the action is fairly simple, it can be mishandled. A short cycle occurs when you do not properly operate the trombone-like action. You might not completely rack the bolt

to the rear and push it forward too soon. This may result in a feedway jam that is difficult to clear. A redesign of the Remington shell carrier has made the Remington 870 less susceptible to shooter error, for example.

Self-Loader: I would think long and hard before choosing a self-loading shotgun. If you are willing to deploy a quality self loader, proof it extensively, and keep it well maintained and lubricated it could be a good choice. Self-loaders demand full power shells and will not function with reduced recoil loads, which is an important consideration. Among the self-loaders I have tested with good results are the TriStar shotguns, particularly the Raptor.

HANDLING A SHOTGUN

A shotgun is handled largely by feel. The conventional stocks with semi pistol grip handle well and the natural point is attractive. While



This is a Rock Island 12 gauge with marine finish and Speed Feed stock.

THE SHOTGUN SOLUTION



(from top)

- The modern Remington shell carrier, lower, has been slightly modified to limit short cycle malfunctions.

- The author's Remington shotguns each feature a sizeable and effective recoil pad.

- The modern Remington tactical shotgun's muzzle brake is a good addition.

**“THE MOST
VERSATILE AND
POWERFUL
CHOICE IN
SHOTGUN
GAUGES IS
THE 12 GAUGE.”**

the shotgun must be aimed as carefully at short range as a rifle, as the pattern is very tight, just the same we are moving to a firearm that must be handled more like a rifle when we go to a pistol grip tactical stock shotgun.

While commonality with the AR-15 rifle is fine, the shotgun is a far different firearm than a rifle. At moderate range, 10 to 20 yards, the traditional stocked shotgun swings quickly and features a fine natural point. I prefer the standard stock on my personal Remington 870. I would certainly give

both a try before dedicating to the modern tactical-type shotgun. A simple bead front sight offers rapid sight alignment and a brilliantly fast shot on target. Rifle sights are the superior choice for work with slugs. My old Remington 870 smooth bore shotgun is accurate to 50 yards with the Remington slug. The Winchester 1300 rifled barrel shotgun is far more accurate to 100 yards. The pistol grip shotgun with no stock is the least desirable of all shotguns, tactically, and very difficult to control. They have some merit in very tight corners. You should carefully consider your likely scenario and choose accordingly.

CONSIDER THE PRICE

There are many shotguns available with a wide variety of price tags. The price leaders are the ones made in China, the Philippines, and Turkey, and those may be all that you need, as you don't see yourself shooting for recreation or sport. The Tri Star guns, made in Turkey, are decent performers and economical, however, the primary reason they are inexpensive is that fit and finish is not held to a high standard. The Stevens 320 pump, an import, and the Harrington and Richardson pump action are often found on sale for around \$200. That is a good price for a pump gun that will save your life, but not one that will see a fair amount of use, either at the range or in the field. Check the forend and be certain it isn't loose and that the action works smoothly enough. If you are not interested in a hard-use shotgun that may be fired often, then you may find these shotguns acceptable. On the other hand, the Remington 870 is proven and often found at an attractive price for a high-quality shotgun.

WHAT GAUGE?

The most versatile and powerful choice in shotgun gauges is the 12 gauge. I find the .410 acceptable for those that simply cannot handle 12 gauge recoil. When loaded with buckshot, the .410 demonstrates about the same penetration as the 12 gauge, however, the payload is much lighter. The .410 is on the low end of acceptable but certainly has merit. The .410 slug as loaded by Winchester has demon-



ACTUAL SIZE: An illustration of the most common types of bore sizes.

strated impressive performance on coyotes at moderate range. The 20 gauge is a step up. The 20 gauge offers acceptable performance for home defense when loaded with buckshot. The 12 gauge is preferable for those that feel comfortable with the recoil. And the recoil is simply something to be mastered with practice. The 12 gauge reduced recoil loads are available in both slug and buckshot loads that offer excellent performance. The 12 gauge 2¾ inch reduced recoil buckshot load is ideal for home defense. The rest comes from practice. There are purpose-designed loads for home defense that have much appeal. The Hornady Critical Defense and the Winchester PDX are among these. These loads offer a dense pattern for home defense use.

Never consider birdshot or a light shot load for defense use. Birdshot is designed to reliably kill a bird weighing a few ounces. Only a few of the pellets will strike the bird- or squirrel or rabbit, depending upon the game. A man and a deer are about as hard to put down as the other. Birdshot has such limited penetration it may be stopped by heavy clothing or even a down jacket. Reduced recoil buckshot offers a reliable dense pattern with acceptable close range power.

Magnum buckshot simply isn't needed for close range defense and demonstrates excess recoil. Slugs are a favorite of professionals for many reasons. Slugs offer even better wound potential than buckshot. The shotgun must be carefully aimed for slug use but the same is true of buckshot inside of ten yards. Managed recoil slug loads such as the one offered by Remington have good penetration and excel-

SHOTGUN LEAD SHOT COMPARISON CHART

Shot Number	Diameter (inches)	Diameter (mm)	No. of Pellets (in one oz.)
000 Buck	.36	9.14	6.2
00 Buck	.33	8.38	8
0 Buck	.32	8.13	9
1 Buck	.30	7.62	11
2 Buck	.27	6.86	15
3 Buck	.25	6.35	19
4 Buck	.24	6.10	21
F	.22	5.59	40
T	.20	5.08	53
BBB	.19	4.83	61
BB	.18	4.57	72
1	.16	2.79	103
2	.15	3.05	125
3	.14	3.30	154
4	.13	3.56	191
5	.12	3.81	244
6	.11	2.79	317
7	.10	2.54	422
7.5	.094	2.39	350
8	.089	2.26	410
8.5	.085	2.16	470
9	.079	2.01	585
12	.05	1.3	2300

lent accuracy potential. However the full power slugs will often fragment to an extent and produce a more complex wound. Penetration is sometimes less in the body but damage is more severe compared to a reduced recoil slug. The full power slug drops less at long range and has more effect. A proven performer at long range that has earned my respect is the Fiocchi Aereo slug. Remember - use a load appropriate for the size of the threat. Birdshot is fine for initial training but not for serious use. **ADD**



The 20 gauge shell, left, offers a reasonable alternative to the 12 gauge, right.



(above) The Winchester .410 slug is a surprising performer. (left) The Hornady 12 gauge Critical Defense is among the finest loads the author has tested.



Stick Maps: Keeping the Course

CHARTING YOUR WAY WITH JUST A COMPASS

Story and Photography by Christopher Nyerges



It's dark, overcast. Clouds have settled low against the mountains and you're traveling into thick woods, where visibility is limited to virtually nothing. Camp was to the east, but which way is that? East, west, north, south? They all look the same now thanks to the twists and turns of the forest. Your map is tucked safely away in your pack back at the camp, but you are lucky enough to have a compass in your pocket. You know you're not traveling in a straight line. The solution to your situation is to always chart a course; know exactly how long you've been walking and in what direction.

With a compass, notebook, and a few twigs, there's an easy way that you can take records of your travel, and then chart a direct path back to your camp.

COMPASS WORK

It is important, before you start out, that you are able to determine what direction (in degrees) you are walking. With your orienting compass, point the "direction of travel" arrow – which is the printed arrow on the housing of the compass – in the direction you are traveling. Then turn the round dial until the orienting arrow is directly over the north end of the needle. Sometimes we refer to that step as putting the dog in the house. The orienting arrow looks sort of like a dog

house, and the magnetic needle (the "dog") must be kept aligned with the dog house. As long as you keep the dog in the house and follow your "direction of travel" arrow, you're accurately traveling in the direction you intend.

EXAMPLE OF THE PLAN

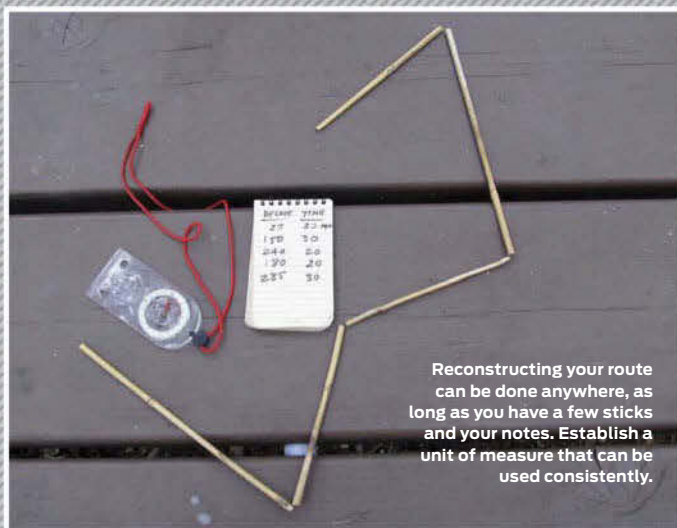
From camp, you set out at 27 degrees and walk for 20 minutes. In your notebook make two columns, one for degrees and one for time. Record 27 in the degrees column and 20 in the time column.

Then, you decide to change directions, and you head out at 150 degrees. You write that down in the degrees column. You walk for 30 minutes before you pause, so you record 30 in the minutes column.

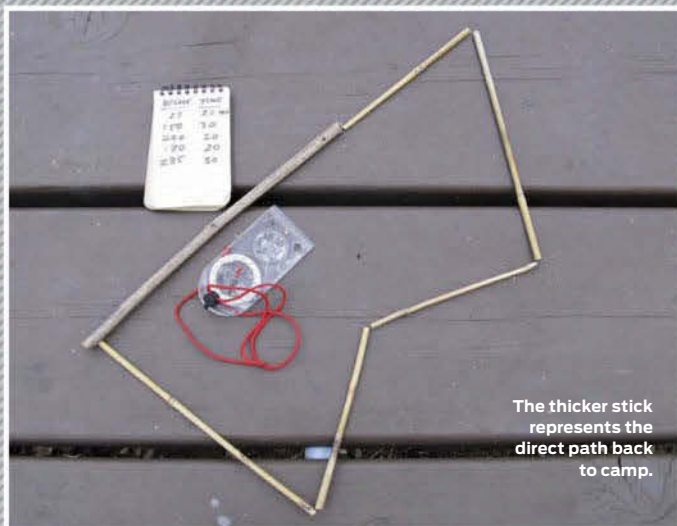
You continue this way for the rest of the day, always recording the degree in which you walked and the amount of time you walked in that direction. Obviously, for this system to work well, you need to walk in fairly straight lines. In fairly rugged terrain, this system might not be practical or possible. Constantly checking your bearing is necessary to remain in a straight line.

"AS LONG AS YOU KEEP THE DOG IN THE HOUSE AND FOLLOW YOUR 'DIRECTION OF TRAVEL' ARROW, YOU'RE ACCURATELY TRAVELING IN THE DIRECTION YOU INTEND."

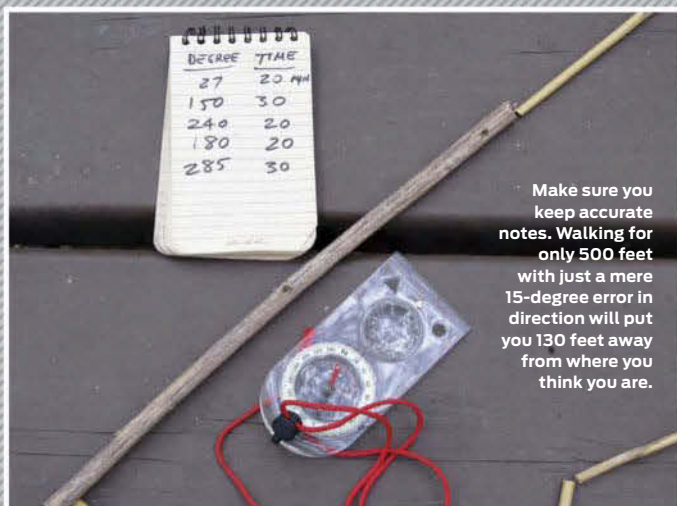
Stick Maps



Reconstructing your route can be done anywhere, as long as you have a few sticks and your notes. Establish a unit of measure that can be used consistently.



The thicker stick represents the direct path back to camp.



Make sure you keep accurate notes. Walking for only 500 feet with just a mere 15-degree error in direction will put you 130 feet away from where you think you are.



To orientate yourself to the direction of travel, point the direction of travel arrow in the direction you want to travel.



Turn the round dial until the orienting arrow is directly over the north end of the needle, sometimes referred to as "putting the dog in the house."

BACK TRACK

You're done exploring for the day. The sun is starting to get low on the horizon and it is time to head back. Your notebook contains six entries for degrees traveled, and six entries for amount of time traveled.

With that information, you are now going to create a simple map to determine a straight path back to your starting point.

Here is an example of what your notes might look like.

DEGREE OF TRAVEL	TIME TRAVELED
27	20
150	30
240	20
180	20
285	30

Using sticks on the ground, convert the units of time into linear lengths. For example, each 10 minutes of time traveled will be one inch. It doesn't really matter whether you make each 10-minute segment represent one inch or five inches or the length of your finger or the length of your Swiss army knife – just be consistent with whatever unit of conversion you use.



With accurate notes showing what direction you traveled and how long you traveled, you'll never get lost.



Making two columns on a notepad, one for degrees of travel and another for time traveled, you can easily reconstruct your route.



Make sure you note every change in direction. A small error in degrees for any length of time will skew your direction of travel.

For your first 20-minute leg of your journey, you cut a straight stick two inches long (10 minutes = one inch). Lay the stick on the ground and align it at 27 degrees, your first direction of travel.

The next leg of your journey was 30 minutes at 150 degrees. Cut a stick that is three inches long. From the leading end of the first stick, set down your three-inch-long stick and align it at 150 degrees. You are creating a road map of your journey.

Next, you cut a two inch stick and align it at the end of the last stick at 240 degrees.

Next, cut another two inch stick and align it at 180 degrees from the end of the last stick.

Finally, you cut a stick three inches (30 minutes = three inches) and set it at the end of the last stick at 285 degrees.

You have just created a visual map on the ground of your journey using sticks and your notes.

FINDING HOME

When you have completed your stick-map, place your compass at the end of the last stick (which represents where you stopped), and point it to your starting point. That is your direct line back to your camp. Put the "dog in the house" on your compass and

simply follow the direction of the travel arrow back to camp.

And because you have chosen each 10 minutes of travel time to represent one inch, you can just measure a straight line from the end of the last stick to the start of the first to get a good idea of how long it will take you to get back to camp.

In this example, you can walk straight at 30 degrees for about 35 minutes and you'll be back in your camp.

TERRAIN VARIABLES

There are a wide variety of variables that come with hiking on uneven terrain. That is, if you had a lot of uphill travel, you probably couldn't cover as much terrain in 10 minutes as you could if the ground were flat. You should record these terrain changes in your notebook.

If you walked for 20 minutes, that would normally represent a two-inch stick. But if the terrain was uphill, you wouldn't have been able to cover the same distance in the same time. You would estimate that it would take you twice as long and probably use just a one inch stick for that leg of your journey. You should also record any changes in the speed of your hiking, though this works best if your speed is more or less the same. **ADD**



Still Lost?

After following the notes in your notebook and the stick map you created in the dirt, you walked in a specific direction for a specific amount of time and you didn't end up in your camp. Now what? Number one, don't panic. Hopefully, there is some feature that might make your camp recognizable.

If nothing around you is recognizable as the direction of your camp, here's what you do. First, mark where you ended up somehow. Make a pile of stones, or tie a cord around a tree, or something so you know where you ended. Hopefully, you won't come back to this point.

Now, begin to make a clockwise circle around this point. Be very observant. Keep circling around and around, making a slightly bigger circle each time. Eventually, you should find your camp.

If you don't like the looseness of continually making a larger circle, try making squares. Walk 10 paces north from your ending point, then ten paces east, then 20 paces south, 20 paces west, 30 paces north, 30 paces east, 40 paces south, etc., always continually expanding your area. Unless you made some very serious errors in the recording of the legs of your journey, you will soon find your camp.

STORIES OF SURVIVAL

'We Went Through HELL'

HOW TRAGIC MISTAKES IN THE SAHARA DESERT LEFT 11 DEAD

Story by **Bryan Dumas** | Photography Courtesy South African Military History Society



(clockwise from top) Lieutenant (later Major) J L V de Wet. • Lt. Col. H. H. Borckenhagen, commanding officer of the 15th Squadron SAAF. • Air Mechanic Noel St. Malo Juul, the sole survivor of the Kufra Tragedy.

S ometime around May 8, 1942, lost in Saharan Desert in Libya, Major J. L. V. de Wet of the 15th Squadron of the South African Air Force (SAAF) wrote in his diary:

"6 of us left — out of 12 — no water — we expect to be all gone today. Death will be welcome. We went through hell."

The SAAF established the 15th Squadron in 1939 and it was used for maritime patrols. By 1941, it was reborn as a North African unit with the primary role of protecting ground troops in the North African campaigns of World War II. The unit first camped at Amariya near Alexandria, Egypt and was equipped with Blenheim MK IVs. Though the Blenheims were obsolete when it came to primary front line aircraft, they still could serve as combat support in North Africa where German and Italian air opposition would be minimal. Eventually, the unit would head south, via train and Nile River boat to Wadi Haifa where a group would break off and trek northwest, through the unflinching, brutal

Sahara Desert of Western Egypt and Eastern Libya. Almost a month earlier, on April 17, 1942, SAAF mechanic Gerald Mostert wrote in his diary of their first day on the road to Kufra:

"Say goodbye to Wadi. Leave in convoy at 16:00 hrs. Do 20 miles & make camp after losing the convoy & nearly getting lost.... Extreme temp — in shade today 110°."

They would finally reach the small oasis of Kufra a week later after covering nearly 630 miles of desert emptiness.

UNFORGIVING DESERT

The Sahara surrounding Kufra is a harsh and forbidding land that renders a brutal punishment on the foolhardy, inexperienced, and naïve. And it was into this environment, devoid of human habitation save the small Senussi tribal village of Kufra (turned into a refueling base by the Italians in the 1930s) that the 15th Squadron of the SAAF sent three Blenheims, their crew, mechanics, and radio operators with only two members of the entire 15th having had any desert training or experience.

(clockwise from right) The flight plan and forced landing sites of the doomed planes.

- Relics of the Kufra Tragedy.
- The harsh terrain of the Saharan Desert that the downed crewmen and search parties had to endure.



Problems plagued the 15th at Kufra from the start. When the three aircrews under the command of de Wet and their three Blenheims reached the airbase on April 28th they found that the radio Direction Finding (DF) station was not operating correctly. Despite this, the aircrews were able to land safely, but it was enough of a concern that Lt. Col. Borckenhagen ordered all aircraft grounded until the problem was fixed.

By the morning of May 3, the point-to-point radio station was deemed to be functioning properly. The radios on the aircraft were tested and all checked out. So the three Blenheims were fitted with fuel, oil and armaments for a familiarization flight the next day. Contrary to his orders, de Wet planned for all three aircraft — numbers Z7513, Z7610, and T2252 — to engage in the flight.

Each plane carried seven-and-a-half gallons of fresh water and rations that could last four days. Additionally, each crewmember was

assigned to carry two quarts of water.

The main objective for de Wet in getting all three aircrews flying was to acquaint the navigators and pilots with the region, get some desert flying experience for his crews, and allow for some training time in the air for his navigators.

The route would be nearly square and cover some 208 miles and a flight time of close to two hours.

Based on what followed, from both de Wet's diary and the sole survivor Noel St. Malo Juul's testimony at the Court of Inquiry later, de Wet would have been better off training his navigators on the ground at Kufra.

FLIGHT TIME

The three aircraft took off at 6 a.m. on May 4. The weather was good for flying and the take off was uneventful. The three planes flew at 1,200 feet and from a navigator's log we know that the outside temperature hovered around 100 degrees F and was turbulent enough they were unable to record the drift readings.

RELICS FROM THE KUFRA TRAGEDY



FIRE EXTINGUISHER
(USED BY THE DESPERATE MEN TO COOL THEMSELVES)



TIN OF HERRING IN TOMATO SAUCE
(THE STRANDED MEN DRANK THE LIQUID, UNABLE TO EAT ANYTHING)



OXYGEN BOTTLE
(EMPTY)

TIN OF SINGAPORE PINEAPPLES
(LABEL STILL LEGIBLE AFTER ALMOST 60 YEARS)



According to N St. M Juul's testimony, the training run completed all their tasks and they returned to Kufra around 8:30. However, based on reports from the three waypoints along the way, the three SAAF planes were hopelessly off course from the start.

None of the three waypoints reported seeing or hearing the group at the times they were supposed to cross them. It is possible that the navigators and pilots aboard the aircraft assumed they recognized land features from maps and changed course to their next leg thinking they had reached their target points. Around 7:10, the radio post at Kufra heard from Z7610, piloted by 2nd Lt. J. H. Pienaar, requesting a bearing. Unfortunately, the navigator aboard did not send out the appropriate



(this page, clockwise from top left) **The desert caravan from Wadi Haifa to Kufra.** • **A Vickers Wellington used in the search and rescue.** • **Camels and soldiers at Kufra**

(opposite, clockwise from top left) **The battered aircraft hanger at Kufra.** • **One of the doomed planes, Z7610, in the hanger at Kufra.** • **The burial site of three crewmen of the 15th Squadron SAAF.** • **Z7610 and T2252 on May 12.** **Burial site of the crew is in the foreground.** • **Center section of the main spar from Z7513.**

Morse code signal so no bearing could be ascertained.

At 7:27, de Wet's plane was heard requesting a bearing, but, again, the appropriate dashes and dots were not transmitted. The station operators took snap bearings and responded, "120-3=0527" which meant for the planes to fly on a 120° heading, third class fix, 05h27m (GMT). From de Wet's diary we know the only message his navigator heard was "3-0-5," because he writes:

"On last leg (No. 7 to Cufra) D.F. gave course to steer 305 deg. On E.T.A. turned to 305 found lost so flew on 125."

This was the beginning of the end for the men aboard the three aircraft.

LOST!

At some point, while they flew back on the 125 degree reciprocal heading, de Wet's aircraft's starboard engine cutout and he ordered all three planes to land. The pilots and navigators quickly got together and debated their location and all had different opinions.

One thing they did agree on was that they were no further than 20 miles from Kufra and that rescue would be imminent. In fact, they

were more than 80 miles away and rescue would not come for eight days. What followed can only be described as a litany of what not to do in any survival situation.

DESERT HEAT

Under the intense desert sun the men found the heat to be unbearable and, either out of desperation or an assumption they'd be rescued soon, went through nearly all their water. In his testimony Juul said:

"We did not ration the water on the 4th May, and by the following morning had consumed nearly 20 gallons, when we decided to ration water."

Had de Wet imposed the desert rations of 2.5 liters of water/day there would have been enough to last four days.

Back at Kufra, the garrison commander quickly realized the three Blenheims were down and lost. Search parties were organized at Kufra, Rebiana, Bzema and LG07, but no one had heard the aircraft on their original flight and all teams returned having found nothing.

In Amariya, Borckenhagen, hoping for better news the next day, delayed orders to send out search planes. On May 6, two Bombay Bris-

tols left Wadi Haifa for Kufra, but from Gerald Mostert's diary, we know that the planes could not land in Kufra because of a sandstorm; they force landed 40 miles south of the airbase.

"Have dust storm," he wrote on May 7. "Still no news. Bombays return [to Wadi]."

To compound matters, the pilots of the Bombays did not know that the DF station in Kufra was operational, so they never attempted to make contact with the base.

LAST RATIONS

At the site of the three stranded aircraft, the situation deteriorated quickly. On May 6, de Wet issued the last 1.25 liters of water to each man (one small bottle).

"On the morning of the 6th we received our last ration," Juul testified.

By now, the men already drank the oil from the sardine tins and the juice from the canned fruit. In desperation, de Wet had ordered search flights to be conducted. Two flights went out immediately on May 4, but returned disappointed. The next flight would occur on May 6, as Juul would testify:

"On the morning of the 6th May, 2/Lt. Pienaar decided to take off in



Z.7513 and fly west as this was the only direction that has not been searched. He did not return. We were still trying to receive wireless messages without success."

Apparently, fuel became an issue and the plane was forced to land some 30 miles to the north of the other stranded aircraft.

By the evening of May 6 a sand-storm swept through the site of the downed planes. With no shelter — other than climbing inside the aircraft and baking in the heat—the men were battered by the parching winds that not only dehydrated them, but also allowed static electricity to form and spark from one man to the other on the slightest contact. In this horrific environment the men went mad and began to do desperate things. De Wet's diary explains:

"Still some water left. Broke compass for alcohol - it's stimulating. Not so much heat as previous days - but one must have water."

While "stimulating" in the short run, the long-term effects were disastrous. One man drank too much alcohol and shot himself because of the pain in his stomach.

But drinking the ethyl alcohol from the compasses was not the only

poor decision the men made. As the sand storm intensified, they resorted to spraying themselves with the fire extinguishers to cool their bodies. Again, the relief was only momentary, and, soon, their skin erupted in blisters that ruptured and left their skin raw and exposed to the wind.

By the end of May 6, three crewmembers were dead.

"It's the 5th day, second without water and 5th in a temp. of well over 100," de Wet wrote. "Boys are going mad wholesale - they want to shoot each other - very weak myself - will I be able to stop them and stop them from shooting me - Please give us strength."

Despite the fact that a ground search was closing in on the location of the downed aircraft, the mood at the site had grown despondent. According to Juul, the men suggested to de Wet that he begin shooting "them as all hope of being found had been given up."

LAST DIARY ENTRY

Somewhere around May 10 de Wet makes his last entry:

"Hope, Sgt. Vos and Lew also gone. Only me, Shipman and Juul left. we can last if help arrives soon - they know where we are but do not

seem to do much about it. Bit of a poor show isn't it."

What he did not know was that Z7513 had been found the day prior, but all three men were found lying in the shade of the wing, dead, probably from exposure and/or thirst.

On May 11, Mostert notes in his diary:

"Kites [planes] go out early and the original Wimpi [a Vickers Wellington] finds the other two kites about 25 miles North of mine, in the form of a Vee. Juul was the only survivor - brought in and put in sick bay. So the sad fate of the illfated [sic] lost patrol is established."

The bodies of the 11 men who perished were buried at the crash sites by the rescue parties, but later exhumed and reburied at the Knightbridge Cemetery in Libya. The Court of Inquiry set the cause of the tragedy with the lack of experience and skills of the pilots and navigators and the escalation of the tragedy with the "(a) Failure at first to appreciate their plight. (b) Failure to ration their water immediately. (c) Unintelligent use of compass alcohol and fire extinguishers."

Sweeping changes would follow, but all too late for the 11 men of the 15th Squadron SAAF. **and**



PHOTO BY THINKSTOCK

Know Your Knots

A WELL-TIED KNOT CAN GO A LONG WAY

Story by **Larry Schwartz** | Photography Courtesy AnimatedKnots.com

Who knows when and how early man tied the first knot. Maybe he was inspired by the way a snake coiled around its prey holding it tight. Or after trying to get something that was held in place by a mass of convoluting vines the idea dawned on her that she could use smaller twines the same way to attach something like a stone to a stick to make a hammer. Whatever it was, knots were probably one of the first technologies that early humans used as they started to make more sophisticated tools. Today there are over 2000 different knots listed in what is commonly referred to as the bible of knot tying, "The Ashley Book of Knots". Each knot was created to meet the needs of a specific situation, but in general they are used for four main purposes:

- Connecting two or more ropes together.
 - Binding or attaching something to another object.
 - Tightening a rope or set of ropes.
 - Making a loop to use to attach something to a stationary object.
-

"TODAY THERE ARE OVER 2,000 DIFFERENT KNOTS LISTED IN WHAT IS COMMONLY REFERRED TO AS THE BIBLE OF KNOT TYING, 'THE ASHLEY BOOK OF KNOTS' BY CLIFFORD W. ASHLEY."

KNOT VOCABULARY

Like any niche specialty, there are a variety of terms and vocabulary that one needs to know to better work with ropes.

Bend: A knot, such as the Sheet Bend, used to connect two pieces of rope together.

Bight: Made by folding a piece of rope into a "U" shape; this can be done either at the end of the rope or somewhere in the middle, depending on what you are trying to do. See Loop below.

Hitch: A knot used to attach a rope to some object such as a hitching post or tent peg.

Loop: Made by passing the ends or parts of the rope over each other. See Bend above.

Running End: The part of the rope that is manipulated to make the knot; also called the working end, tail end, live end, or tag end.

Standing End: The part of the rope that is not manipulated to make the knot; it is often connected to something else.

Turn: One pass of the rope round or through an object.

Whipping: A binding knot used to prevent a rope's end from fraying.

WHIPPING A ROPE

The first thing you need to do whenever you cut a piece of rope is to treat the end in some way to keep it from unravelling. This can be done by dipping it in liquid rubber or by putting some electrician's tape or duct tape around it. But the most permanent method is to just whip the end with some string or fine cord. This is done by making a bight of string or dental floss at the end of the rope and then wrapping the string around the bight and then securing the running end. See the illustration for more details.



Square Knot: To tie the square knot, hold one rope end in one hand and the other rope end in your other hand. Twist the left hand rope over and under the right hand rope and pull it tight. Then twist the right hand rope over and under the left hand rope and pull it tight. The ends of the rope should both be on the same side of the knot if you tied it correctly. If they are on opposite sides of the knot you have tied a Granny Knot which will come undone.



Bowline: To tie the bowline hold the standing part of the rope in your left hand, with your right hand make an overhand loop in the standing part so that the rope still points towards you. Then take the running end around your waist and then up through the loop. Pass the running end that you just pushed through the loop around behind the standing part of the rope and back down through the loop. Hold onto the three ends that point toward you and pull up on the standing part to tighten the knot.



Clove Hitch: To tie the clove hitch throw the rope end around the pole and lay it over its own standing part. Bring the rope end once more around the pole. Finish by carrying the end under the rope itself, then tighten the hitch as much as possible.



Figure-8 Knot: To tie the figure-8 knot hold the standing end in one hand and pass the running end over the standing end to make a loop, then pass the running end behind and under the standing end. Finish it off by passing the running end down through the loop you just formed. If you tied it correctly the knot should look like the number eight.



Sheet Bend: To tie the sheet bend, make a bight on one of the ropes (on the heavier one if they are of different thicknesses) and pass the end of the second rope through and around the bight, then tuck the running end of the second rope under the part of the rope that was passed through the bight."



Two Half Hitches: To tie two half hitches, pass one end of the rope around the post. Bring the rope end over and under its own standing part and through the loop you have formed this way. Do the same thing once more in front of this first half hitch. Again bring the rope end over and under the standing part and through the loop formed.



Timber Hitch: To tie the timber hitch you pass the running end of the rope around the pole and then around the standing end. Wrap the running end around itself three times like a snake squeezing its prey and tighten the knot so that the three turns are gripped against the pole.

KNOTS FOR JOINING TWO ROPES TOGETHER

The most common knot is one that connects two pieces of rope or cord together from some purpose such as tying your shoes in the morning, putting a ribbon on a birthday present, or connecting a thin rope to a thicker rope. These knots meet that need.

Square Knot: The square knot is a binding knot, used for tying two ends of the same rope together to secure something tightly.

Sheet Bend: A sheet bend is the best knot to tie two ropes together, whether of the same or of different thicknesses.

KNOTS FOR LASHING

We all have occasion where we need to tie something down or attach a rope to some heavy or stationary object. These two knots are excellent choices for that purpose.

Clove Hitch: This is used to attach a rope to a post or rail.

Timber Hitch: This is used for handling cargo or when you need to move or drag something along like a log or spar. The same hitch is known as a Bowyer's Knot because it attaches the end of the bow string on a longbow.

KNOTS FOR ADDING TENSION

Every time you pitch a tent and put pegs in the ground, or set up a clothes line, or string up a hammock, you need a knot that will allow you to tighten the strain being placed on the rope to keep it taught. These three knots are designed for that particular purpose.

Midshipman's Hitch: The midshipman's hitch is used for any time you need a loop that will hold tight when pressure is applied but that you can easily move up or down the standing part to adjust the tension. A common use is for guide lines on a tent.

Two Half Hitches: This is one of the simplest knots for tying a rope such as a clothesline or the rope of a boat to a pole or a ring. It forms a loop that can be pulled tight yet which is easily loosened again.

MISCELLANEOUS KNOTS

There are literally hundreds of different knots in the world, each one designed to meet a specific need. These three illustrate just how unique those needs can be.

Figure-8 Knot: The figure eight knot is a stopper knot used to make a bulky knot that will

GOOD REFERENCES FOR KNOT TYING

There are a number of good books on knot tying, but many of them are more complicated than you will likely need and have more knots than you will ever use. My recommendations are to get the following:

"Handbook for Boys," by Boy Scouts of America; this will give you a good list of knots with illustrations to go along with written instructions on how to tie most useful knots.

"The Ashley Book of Knots," by Clifford Ashley; this is the standard by which all other knot references are judged.

AnimatedKnots.Com, by Alan Grogano; this very comprehensive website is one of the best online knot tutorials, containing written directions on how to tie over 300 knots and videos showing how to do it.

The Animated Knots smartphone app for iPhone and Android, also by Alan Grogano; this has everything that the website has, plus it is always with you whenever you need to learn a new knot or brush up on one you haven't used in a long time.

not slip. It is designed to stop the rope from running through an opening and to help keep it in place.

Bowline: The bowline forms a loop that will not slip. It is an important rescue knot in fire, mountain climbing, and water accidents. Learn to tie it around yourself, then around someone else.

Prusik Knot: Its principal use is to ascend or descend a rope, or "Prusiking" using loops formed by Prusik Knots as hand and foot holds. Two Prusik loops are alternately slid up the static rope: a long Prusik loop reaches the climber's foot – to allow leg power for ascending, and a second short Prusik loop is attached to the harness – to allow sitting.



So, now that you know a few basic knots, go out and start using them in our daily activities and take the time to learn more of the 2,000 other knots that are out there. There are special knots for most hands-on activities that people do from gift wrapping to sailing to mountain climbing to first aid to camping. **AND**



Midshipman's Hitch: To tie the midshipman's hitch, pass the rope through the eye or around the pole to which you want to attach it. Carry the rope end around the standing part twice and through the loop thus formed. Then carry the rope end around once this time and pull it taut.



Prusik Knot: To tie the Prusik knot you must first make a loop by tying a stopper knot on each end of a shorter rope to form a loop. Once you have your loop, pass the knotted end around the rope you are attaching the Prusik Knot to three times, bringing it inside the loop each time. Make sure the turns lie neatly beside each other, then pull the knot tight.



Whipping a Rope: To whip the end of the rope you should place a bight of string or dental floss along the end of the rope with the bend pointing toward the cut end. Place your thumb over the bight to hold it in place and then start wrapping the string around the rope, moving toward your thumb and the loop end of the string. When you get near the loop put the running end of the string through the loop and hold it in place. You finish off your whipping by pulling on the standing end of the string where you started your wrapping. This will pull the loop under your wrappings where it will be held in place. You want it to be a third to halfway under the wrappings. Finally, trim off any excess string at the standing end and you are finished.



Up Close and Personal

PROVEN **HANDGUN TACTICS** FOR SELF-DEFENSE

Story and Photography by **Steven Paul Barlow** | Additional Photography by Richard Schutz

Dark alleys. Abandoned buildings. Empty parks after the lights go out. Burglars, muggers, rapists, and the underbelly of society that feeds from the lawful prowl, intent on doing harm, taking advantage of the meek, and exacting a hefty price in the meantime. When escape isn't an option, when the police are a phone call too far away, and when imminent danger has breached your personal space, self-defense is the only option.

You can find yourself suddenly fighting for your life, even in the most peaceful neighborhoods. Add escalating factors such as natural disasters, civil unrest or widespread economic hardships and the dangers are heightened. You've read all of the articles recommending which firearms to buy. You've made your choice, purchased a handgun and maybe shot it a few times at the range. Now what are some of the tactics you'll need to know to survive a deadly encounter?

First understand that no article, including this one, is a substitute for training. You need to train and review your tactics regularly. You need to learn from those who have been there and done that. I'm merely going to give you some things to consider.





PHOTO BY STEPHANIE BARLOW

A car door is better than no cover if that's your only option. If you can't drive away, making your way to more solid cover is preferable if you can do it safely.

TAKE COVER

Sometimes having a handgun can give you a false sense of security. Despite what you see on television, you don't want to be standing out in the open, exchanging bullets with the bad guys. Practicing at a typical shooting range can set you up for failure. Think about it. At the range, you stand up straight and tall. You draw your gun, stand perfectly still and concentrate on aiming at the target.

This is fine when you're working on your shooting fundamentals such as sight picture and trigger control. It can also get you killed because it can condition you to stay put when you should be moving quickly to cover. Find a place to practice moving as you draw your weapon. If regulations prevent you from doing that at your range, practice in your home with an empty weapon.

Cover is defined as anything that will stop a bullet before it gets to you. Many times what you think is cover offers only concealment. Keep in mind, interior walls and

doors, furniture and car doors will often allow a bullet to pass right through.

You'll have a big advantage if you can get to cover before the fireworks begin and you can pick your spot to defend, such as when you are upstairs in your home and you hear an intruder below. Knowing your cover options ahead of time and choosing a vantage point that gives you the edge, is much better than wandering through your dark house playing hide and seek with a burglar who might be armed.

In the event of an extended emergency situation, "home" may be wherever you set up camp. Always choose a spot you think you can defend if necessary.

When you're on the move outdoors, if you are alert enough to spot a possible threat but there's no opportunity to avoid it or to retreat, look for places where you might be able to dive for cover – that huge tree, boulder or concrete wall – in the event things escalate into a lethal confrontation.

CARRY METHODS

Have you given much thought to how you're going to carry your handgun? The climate and the type of clothes can affect your decision, but don't make the mistake of choosing the way you carry your gun exclusively on the basis of comfort and convenience.

Each carry method has advantages and drawbacks. For instance, small-of-the-back carry will enable you to conceal a larger handgun, but it can be uncomfortable when seated in an automobile, can cause spinal injuries if you're thrown off your feet and you land on it, and might be hard to deploy if surprised from the rear.

Shoulder holsters can be a good choice when seated in an automobile if your draw isn't impeded by your seat belt. I used to prefer a shoulder holster when riding a motorcycle. The downside of these rigs is they require a jacket to conceal them, and they can become uncomfortable if the straps aren't adjusted just right. Ankle holsters sometimes seem like a good idea because they conceal well, but have you ever tried to run with one on your leg? It can also be difficult to get to your gun, especially if you are fending off an attacker at the same time.

Cross-draw rigs are also good when riding in an automobile, but in close quarters while fending off an attacker, you are either exposing your gun side or risk getting your arm pinned to your body when you attempt to draw your weapon.



(left to right) The bellyband holster is one option for concealing a handgun. While this holster holds the gun in place well, it can be uncomfortable in hot weather. ● A pocket holster is an easy way to conceal a small handgun. The drawback of this carry method is that it's more difficult to get at your handgun while seated in a vehicle. ● The hip holster is a tried and true way to carry a handgun other than the largest hunting handguns. Choose a holster that offers a good retention system, such as this inexpensive Tactical Reflex holster from Uncle Mike's.

PHOTOS BY STEPHANIE BARLOW



An ankle holster may be an effective way to conceal a small handgun, but it's awkward if you have to run while wearing it.

Dominant-side hip carry is the quickest and easiest to learn and, with a good retention holster, can be defended well in close quarters. This method is harder to conceal and it's been my experience that the gun and holster get knocked into things more often. Belly band holsters can be an effective way to conceal a gun, but they can be uncomfortable in hot weather.

Women might opt for thigh carry when wearing a skirt. There are holsters now for small guns that attach to the front of a bra too. Both methods can make it difficult to get to your gun and during a struggle can put other ideas into an attacker's mind. Worse yet is when a woman opts to simply place the gun in her handbag. There's a good chance an attacker is after that handbag. Do you really want him to have your wallet and your gun? The same goes for keeping a weapon in a backpack when you're on the move. You don't want the bad guy to get your weapon and your supplies. On your body is the best place for your gun.

My preferred carry method is in the waistband. Yes, you still need an additional cover garment or you can opt to go casual with your shirt untucked. With in-the-waistband carry the gun doesn't bump into things all day long. It can be drawn easily under stress and can be defended well in a close-quarters attack.

LETHAL CONFLICT

Odds are that if you find yourself in a lethal conflict, you'll be so close you'll be able to smell your attacker's bad breath and sweaty armpits.

One way to get to your gun from its ankle holster is to lunge forward, taking a big step. While lifting your pant leg with one hand, you retrieve your gun with the other. This can be difficult if your attacker is within contact distance.



"ODDS ARE THAT IF YOU FIND YOURSELF IN A LETHAL CONFLICT, YOU'LL BE SO CLOSE YOU'LL BE ABLE TO SMELL YOUR ATTACKER'S BAD BREATH AND SWEATY ARMPITS."

HOLD ON TO YOUR WEAPONS

Don't let the bad guys get your gun. Most confrontations don't start out as lethal encounters. Arguments deteriorate into physical conflicts – pushing and shoving, wrestling, fist fights. If you're carrying a firearm and you are pulled into one of these situations, you don't want your opponent to grab your gun and use it against you.

Start with a holster that has a good retention system. Remember, those aren't foolproof. Lacking that, try to conceal your gun where it's not easily seen as a weapon of opportunity by someone in the heat of the moment.

Having a knife as a backup weapon to slash at an attacker can save your life if there's a struggle for your gun. If it's absolutely necessary to move room to room or around places of cover where an attacker could be lurking, don't lead with your firearm extended at arm's length. Keep your handgun pointed ahead, but close to your chest where it can't be easily grabbed by someone around the corner.



The engine block of your vehicle can provide better cover than the thin metal of its doors. The tires too can help protect you from bullets that might bounce under the car toward you.

PHOTOS BY STEPHANIE BARLOW

“DISTANCE IS ONE OF THE MOST IMPORTANT FACTORS IN SURVIVING A GUNFIGHT.”

Deploying your gun can be a tricky endeavor depending on the circumstances and often requires split-second decision-making. Drawing your gun too early because you merely suspect a threat could mean trouble. And you don't always want to let people know you are armed. If you draw your gun too late, there might be a physical struggle for your weapon and that could mean bigger trouble.

If you can't maintain a safe distance to either retreat or draw your weapon, you have to be prepared to fend off an attacker with one hand while drawing your weapon with the other. Don't make the mistake of carrying your gun with an empty chamber because you think it's "safer." It's not.

CREATE A SAFE DISTANCE

Distance is one of the most important factors in surviving a gunfight. The bad guy might be drugged-up and shaky, untrained or simply just as scared as you are. Still, if he is close enough to touch you, chances are great that he can put a shot in your vitals.

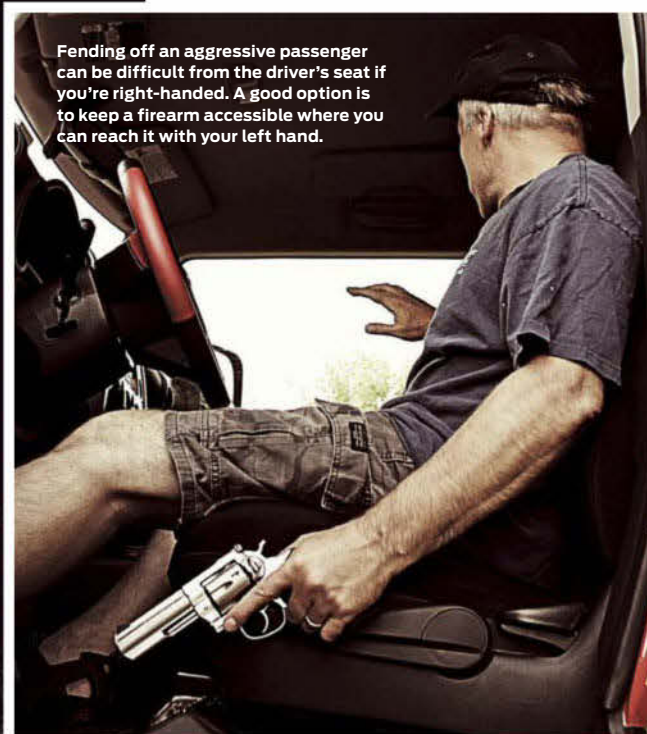
VEHICLE TACTICS

A vehicle that runs is often the best way to escape an emergency situation or devastated area. For that reason, desperate people might do you harm to take your vehicle away from you. Be prepared to defend it.

The first rule is to be very careful who you let in your vehicle. If you are in the driver's seat and are right-handed, it can be difficult to draw your gun to defend yourself without it being grabbed in those close confines by an adversary seated next to you. And you are at the mercy of a backseat passenger with ill intent.

Consider stowing an additional weapon between your seat and the door that you can access with your left hand. Threats from the outside can't always be handled by just driving away. If you are blocked in, you are basically a sitting duck. Those who might want to smash your windows, drag you out and take what you have might be dissuaded by the sight of your gun.

If you're being fired upon, however, you have to be prepared to fight your way out. Don't count on your doors to stop a bullet. Once you are out of your car, your vehicle's engine block might provide the best available cover nearby. Your wheels can provide extra protection as well from bullets that may bounce off the pavement toward your legs.



Fending off an aggressive passenger can be difficult from the driver's seat if you're right-handed. A good option is to keep a firearm accessible where you can reach it with your left hand.



Create a few feet of distance, however, and our shaky gunman might make peripheral, non-lethal hits or miss you entirely. Better yet, move so there are obstacles between your attackers and you.

Sometimes, when an attacker is upon you and he's drawing his own weapon, you can distract him or slow him down by striking out with one hand to his face or throat as you step back to draw your own weapon. This movement, practiced by police as the "shove-and-shoot" drill, puts your opponent off balance, gives you time to deploy your weapon and creates some distance between the two of you.

There are no guarantees. It's always possible that an untrained adversary can make a lucky shot and that could be very unlucky for you. Create as much distance as you can. Stay on the move until you find cover or until you put the bad guy down. If you forget everything else, this can increase your odds of surviving the encounter. **ASG**

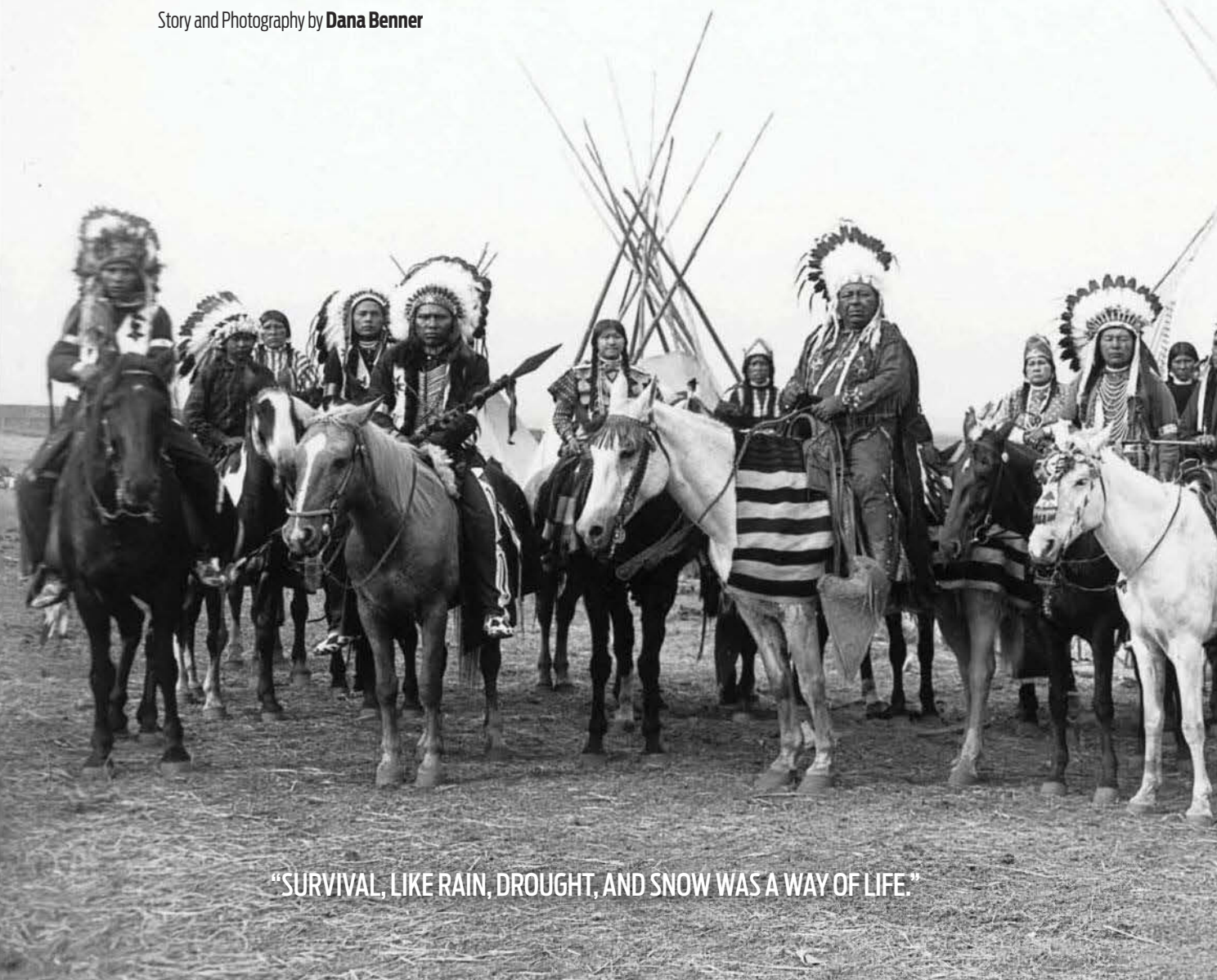
(from top) One way to fend off an attacker is to thrust or shove your non-shooting hand to his face or throat. Don't leave your hand out there where he can grab it.
● As you complete the "shove" to the attacker, take a big step backwards as you begin to draw your weapon.
● You complete the move by getting your gun on target. This "shove and shoot" tactic is an effective way to put an attacker off balance, buying you the time to draw your weapon and create some distance.



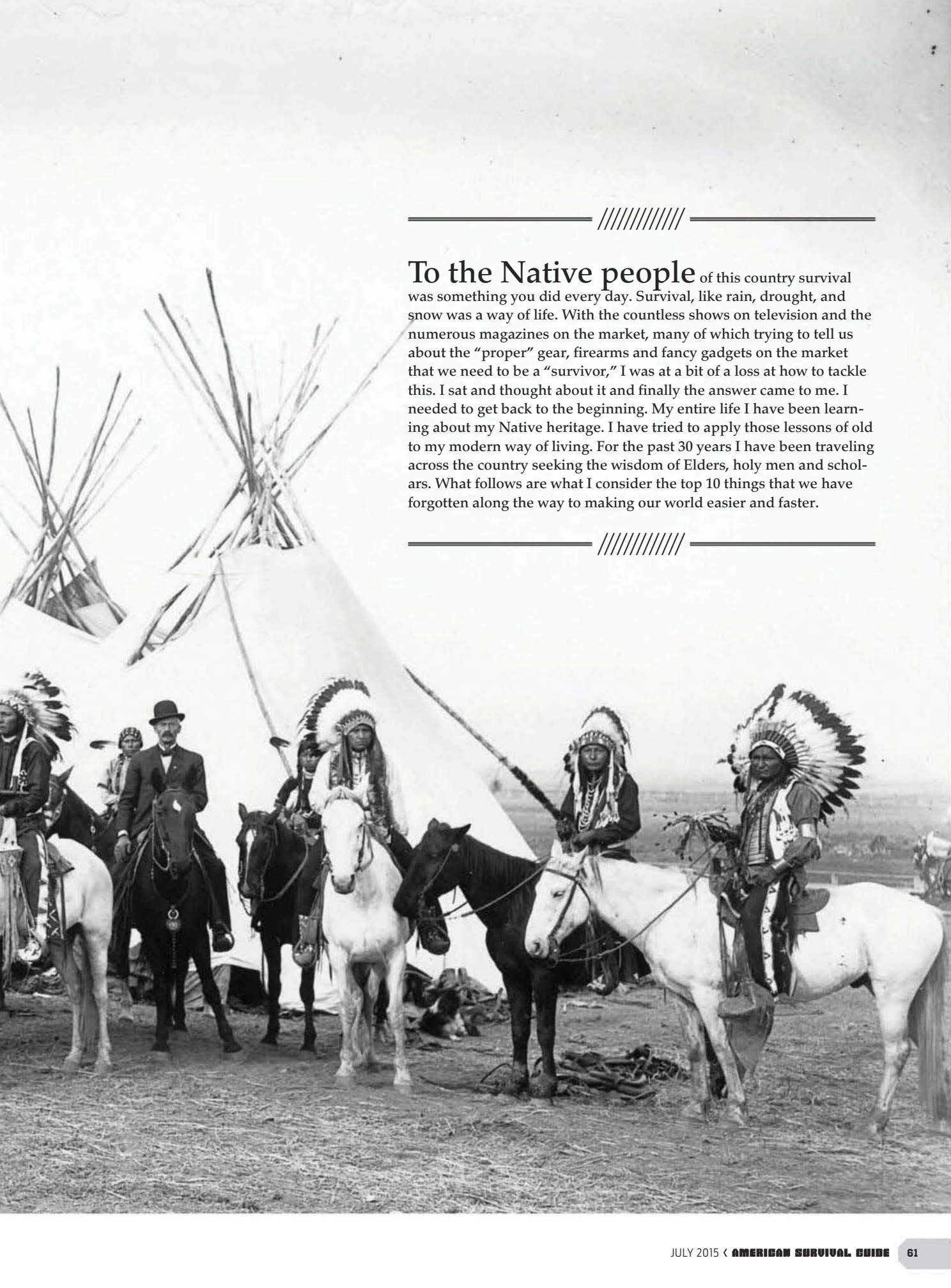
Forgotten Survival

10 CONCEPTS **NATIVE AMERICANS** CAN TEACH THE MODERN SURVIVALIST

Story and Photography by **Dana Benner**



"SURVIVAL, LIKE RAIN, DROUGHT, AND SNOW WAS A WAY OF LIFE."



To the Native people of this country survival was something you did every day. Survival, like rain, drought, and snow was a way of life. With the countless shows on television and the numerous magazines on the market, many of which trying to tell us about the “proper” gear, firearms and fancy gadgets on the market that we need to be a “survivor,” I was at a bit of a loss at how to tackle this. I sat and thought about it and finally the answer came to me. I needed to get back to the beginning. My entire life I have been learning about my Native heritage. I have tried to apply those lessons of old to my modern way of living. For the past 30 years I have been traveling across the country seeking the wisdom of Elders, holy men and scholars. What follows are what I consider the top 10 things that we have forgotten along the way to making our world easier and faster.



Native American civilization centered on what nature provided. For example, reeds found in a stream could be made into baskets and shoes.

“AMONG NATIVE
PEOPLE LIFE IS A
VERY SPIRITUAL
THING AND RESPECT
IS THE KEY TO
SURVIVAL. RESPECT
FOR YOURSELF AND
OTHERS; RESPECT
FOR THE ANIMALS,
FISH AND PLANTS
THAT PROVIDE
US WITH FOOD
AND RESPECT FOR
THE EARTH.”

COMMON SENSE

The human mind is capable of doing great things and it is the best survival tool that we have. Every year there are many people who die in survival situations that don't need to simply because they didn't use common sense.

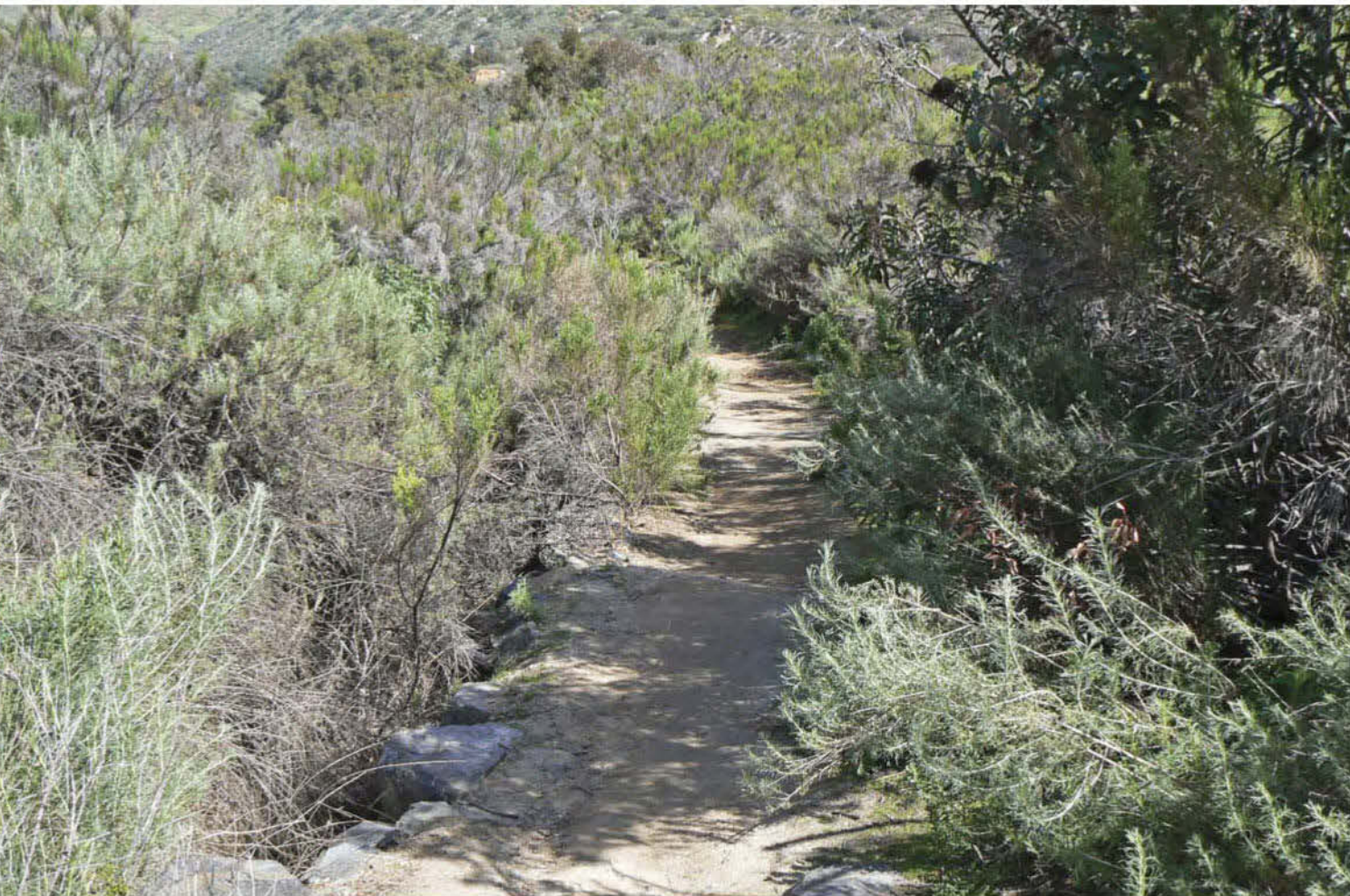
Before starting this article I called an Elder among the Cherokee in North Carolina for his advice. He is a man whom has taught me a great deal over the years and I respect what he has to say, whether he agrees with me or not. He said that people today have lost touch with the land. We don't know how to live with the land and not against it. When we are afraid, we panic and then we don't think.

To survive in a potentially dangerous situation the first thing we need to do is slow down and think. Most situations can be dealt with logic and common sense. As my friend told me, we need to work with the environ-

ment and know our surroundings. When you know your surroundings you know where to find food and water. You also know where escape routes or potential dangerous obstacles are located.

ADAPTABILITY

Adaptability is one of the keys to survival. Sometimes you can't control the situations thrown at you, but you can adapt and overcome. Part of being adaptable is learning all that you can. A Pequot Elder once told me, “No one knows everything, but everyone knows something.” In other words learn to keep your eyes and ears open and your mouth shut. A great deal can be learned, maybe something that will aid you in a survival situation, by listening and not speaking. Among all Native cultures it is considered disrespectful to speak out of turn or to speak while someone else is speaking. Think about how this lesson could apply if you were in a



situation where you didn't want to be noticed, but wanted to get needed information.

RESPECT

I grew up in a family with a mixed ethnic background 50 some odd years ago. My family is a mix of Native American (Penobscot/Micmac/Piqwacket), English and German. While my father never gave his heritage (Penobscot/Piqwacket/German) much thought, my mother embraced her Native heritage (Micmac/English). It was my mother who taught me the old ways. She taught me how to hunt and fish. She taught me how to track animals and how to find edible and medicinal plants. Above all she taught me about respect.

Among Native people life is a very spiritual thing and respect is the key to survival. Respect for yourself and others; respect for the animals, fish and plants that provide us with food and respect for the Earth. I could

very easily jump right in and discuss how Native people made tools, fire and a host of other things, but they are useless without respect. Native people believe that all creatures are connected spiritually; that we are all related. To this day, before I go out to fish or hunt I seek permission, through prayer, from the spirits of the animals or fish that I intend to take to feed my family. To take a life to sustain life you need to show respect to those whose lives you intend to take. Taking a life, any life, is never easy and it shouldn't be. I always give thanks to the animal for giving its life so my family could live. This idea of respect has been lost by many people. The Native people taught this lesson to the early settlers and to the pioneers that came after them. Some listened, some did not.

What follows are the remaining seven lessons. You will notice that all of them, in some form or another, will reference back to the first three.



A mortar and pestle made from stone was a very common tool used in the preparation of food among Native Americans.

(top) Trails formed to and from popular hunting areas, water sources, and neighboring villages. Evidenced by archaeological digs of Native American sites, trading among villages was very popular.



The abundance of nature was thoroughly exploited by the Native Americans, from naturally growing fruits and berries to animals and even reptiles. Very little of what was gathered or hunted was wasted.



OUT OF SIGHT, OUT OF MIND

If you want to go unnoticed, by either people or animals, you need to become one with the environment you are in. Hiding in plain sight if you will. Visit museums (one of the best is the Buffalo Bill Historical Center in Cody, Wyoming) and search books about the fur trappers and Mountain men and see what they are wearing. Notice how they are dressed. None of them are wearing camouflage and you will be hard pressed to see any wearing black. Most of their clothing is muted shades of brown, gray and green. They are wearing these colors because they will blend in with any environment that you will find yourself in. They learned this lesson about blending in with the environment from the Native people.

Camouflage is great and I wear it myself, but the camouflage you wear needs to reflect the environment you are in. Woodland camo will not work in the desert and no camo works in an urban environment. Unless you are operating at night black is the worst color to wear. While most mammals can't see color, humans can. During the day black looks out of place in the woods as much as blaze orange does.

MAKING DO WITH THE RESOURCES AT HAND

Adapting to situations means being resourceful with the materials that you have available. Whenever Native hunters went out into the woods they traveled light, carrying only those things that they couldn't do without. Everything else they either made from material found in the woods or they did without it. Here in the Northeast they would carry their gear in pack baskets woven from Ash splints. They traveled light and fast.

This lesson can easily be applied to our world today. Modern society is a throwaway society. Many of the things we throw away can still be used. Being able to re-use and re-purpose available material could mean the difference between life and death. Old batteries may allow you to start a fire and old plumbing pieces may help you acquire drinking water. The list could go on and on.

In a wilderness situation having respect and understanding of the environment you are in can enable you to find valuable resources. Which plants provide cordage? Which plants are edible and which are poisonous? What plants are medicinal (according to my mother and an Athabascan woman I met in Alaska, often medicinal plants grow near the poisonous ones)? The wilderness provides a wealth of resources if you know where to look.

FIRE

It is amazing how many articles are written about primitive fire starting. I asked my Cherokee friend about this and he laughed. "Don't you think that our ancestors would

not have used a lighter if they had them?" I have to agree with him. Don't get me wrong. There is a place for the ability to start a fire using primitive techniques and I know how to do so, but if given the choice, I would choose the lighter over rubbing two sticks together any day. This goes back to common sense and adaptability. For a couple of dollars you can pick up a package of lighters. I carry one in my truck, one in my pocket and a couple in my pack.

FOOD

The act of obtaining food has been, and always will be, a priority in a survival situation. Today with a supermarket on every corner some people have lost the knowledge of how to hunt, fish, grow and forage for their own food. When in a survival situation, whether in an urban setting or in the woods, food gathering will be an ongoing task, so you need to grab things when you can. With your understanding and respect for the environment you find yourself in, combined with common sense, you will find the food that you need. If you are in the middle of a city you aren't likely to find a blueberry bush, but common sense tells you that an urban environment will have stores and most stores have food of some sort. Remember, use all available resources.

To Native people the woods and fields are the grocery store. Here again the items in this "grocery store" will differ depending on where you are. There are edible plants, insects, rodents and larger game everywhere. It is knowing which isle they are in that is the tricky part.

In some areas, like in the Southwestern part of our country, many Native people lived primarily by eating insects, lizards, snakes, rodents and wild plants. Why, you may ask? It is very simple. These people knew and respected their environment. The Southwest is a very dangerous place. There are many things out there that can kill; the most lethal is the sun and heat. This area gets very little rainfall so water is scarce. To have large game animals you need a reliable source of water. In places like Arizona, game such as elk and deer are found mainly in higher elevations where there is more water available. To pursue these animals on a regular basis would put the hunter at risk and it is a waste of valuable energy as there is no guarantee that game will be taken. When you expend more energy trying to obtain food than you are going to get back from that food



that you do get it ends up as a net loss. Too many net losses equal death.

In the Northeast a popular past-time is to go ice fishing. That is something that the Abenaki wouldn't do on a regular basis. Like the heat of the Southwest, the extreme cold in the Northeast will kill you in minutes. Your body uses energy to generate heat. What little energy that you would get from the fish that you may, or may not, catch is not worth the risk. Once again, respect, understanding the environment and using common sense must dictate what you do.

SHELTER

In a survival situation how would you make a shelter and where would you locate it? Would you locate it close to the water source? How about in a grove of tall trees? I would choose neither and neither did the Native people of old.

When you find a reliable water source it is very easy to say, "This is a great place to set up camp." Don't do it. Native people have a great respect for water. Water can sustain life, but it can also take life. Sudden rainstorms can turn a small creek into a river in a matter of minutes putting you in a very dangerous position. If in the Southwest the Native people never set up camp near a dry riverbed for the same reason. Water sources also attract animals and animals attract predators, both human and animal, presenting another potentially dangerous position. For these reasons Native people always built their shelters on high ground within easy walking distance to the life-giving water. The high ground is always easier to defend or flee from if need be.

Once on higher ground, look for places that are fairly flat and have brush. Stay away from groves of tall trees. There are many dangers that exist in these areas. Tall trees are magnets for lightning strikes. Tall trees may also have dead limbs that could come down at any moment. A larger branch or

Shelters were constructed of locally-obtained materials to not only protect them from the elements but to provide buildings for cultural events.

"NATIVE PEOPLE HAVE A GREAT RESPECT FOR WATER. WATER CAN SUSTAIN LIFE, BUT IT CAN ALSO TAKE LIFE. SUDDEN RAINSTORMS CAN TURN A SMALL CREEK INTO A RIVER IN A MATTER OF MINUTES PUTTING YOU IN A VERY DANGEROUS POSITION."

Native Healers

AMONG NATIVE peoples, everyone had their jobs to do. Each one of these jobs was equally important for the well-being of a particular village. Within a village one of the most important jobs was that of a healer, a position that was mainly held by women highly trained in the use of medicinal herbs and plants. Today we would call these people doctors.

Healers should not to be confused with so called "medicine men". Medicine men weren't "healers" in the true sense of the word. While they did know some aspects of medical treatment, they were holy men and spiritual leaders. Medicine men only stepped in when the healer had done all that they could do. At that point it was believed that it was time for spiritual intervention, and the Medicine man was called in.

Prior to the introduction of European and African diseases there were very few deadly afflictions that faced the Native people. Once foreign viruses were introduced the Medicine women and Medicine men had to work overtime to treat their people, both medically and spiritually.

All Native people knew the basics of first-aid and were able to treat mild injuries and illnesses. Basic herbs, both fresh and dried, were kept on

hand to treat things such as poison ivy, mild burns or a wound acquired through daily activities. This supply of herbs could be likened to the modern day medicine cabinet. More serious injuries or illnesses were usually brought to the attention of the village Medicine woman.

The skills of the Medicine woman were learned skills. It was something that was often passed down from mother to daughter. If there was no daughter to pass the skills to, the Medicine woman would select an apprentice to work under her. This training would take many years to master. Not only would the student need to learn all of the different illnesses, but also what plants were needed to treat them. It was not enough to know what herbs and plants worked in any particular case, but also the right dose to use. Natural medicines, just like their modern day counterparts, can be fatal if not administered correctly. The knowledge of a particular village's Medicine woman were guarded secrets and it was a great honor for one village's Medicine woman to share those secrets with the Medicine woman of another village. Just as modern doctors specialize in certain areas, so too for Medicine women. A medicine woman was only as good as the herbs and plants she had had her disposal.

At the correct time of the year the Medicine

woman and her student would collect the essential herbs, roots, leaves and bark that would be needed to keep on hand. Certain medicinal plants were only collected only when they were needed. Some plants only worked when fresh, so collecting them early would be a waste and an insult to the spirit of the plant. Once collected, the material would be allowed to dry in the sun. When collecting bark, only the soft inner bark is used. Once dried the bark and roots would be pounded and ground in a stone or wood mortar. The ground material could then have water added to make salves and poultices or it could be mixed into a tea. It all depended on the type of illness or would be treated as to how the medicine was prepared. Leaves and berries could be collected and dried, or they could be used fresh and more often than not they would either be chewed or eaten by the patient, or they could be used in teas.

Collection of the proper plants was not just a matter of going out and picking what was needed. Proper respect was given to the plants being taken and only a small amount was taken from a particular area. Prayers were said and offerings of tobacco or cornmeal left behind, thanking the plants for the giving of themselves.

even an entire tree falling onto your shelter could make a bad situation even worse.

Locate your shelter within a clump of medium-sized brush. The brush, especially during the warmer months, is usually fully leafed out giving some concealment from prying eyes. Carefully clear out some of the surrounding brush to give you a clear view and to keep something or someone from sneaking up on you. With available resources lash poles, willow if available, together to form a framework for the shelter. Use the brush you cut to cover the framework of poles. In the bottom of the shelter lay a thick layer of pine needles or leaves to help insulate your body from the ground as this will help you stay warm at night. There is no need to freeze at night.

I speak of lashing things together, but how do you do it? If you are not carrying cordage then use what is available. The Abenaki would use spruce root and basswood root to make cordage. Out west the leaves of the yucca plant can be used. Depending on where you are there may be vines (be careful of poison ivy) available. Know your environment and take stock of all available resources.

WATER

Humans can live weeks without food, but only a few days without water. The Native people of the Southwest often made canteens out of gourds and carried water wherever they went. They also stayed out of the intense heat of the day, only moving in the early morning or late afternoon. This act conserves energy and water.

Finding water in harsh conditions can be difficult to say the least. So how did Native people find water? That all depended upon the environment they were in. There are certain plants that store water. Certain plants only grow near water. Native people watched the actions of the large animals as these animals will lead you to water. Small game such as rabbits and squirrels get a great deal of the water they need through the plants that they eat. Containers of all sorts can be put out to collect rain water or to collect morning dew coming off the leaves of plants.

NAVIGATION

Many people today rely upon the electronic device known as a GPS. Even most new cars have GPS units. Many people have no idea





on how to use a map and compass, but even these are “modern” compared to how Native people navigated their way through the wilderness. At one time people found their way by using the sun and the stars.

GPS units run on batteries and batteries die. GPS units are also affected by solar flares, making them useless. Maps are good, but they only cover a relatively small area. The sun and stars are always there. Every day the sun rises in the east and sets in the west. On a clear night a person can navigate by using the North Star.

The sun and the stars are not the only way to navigate. Running water is a good way to figure directions. On the east coast most of the major rivers flow towards the east, the direction of the Atlantic Ocean. Along the

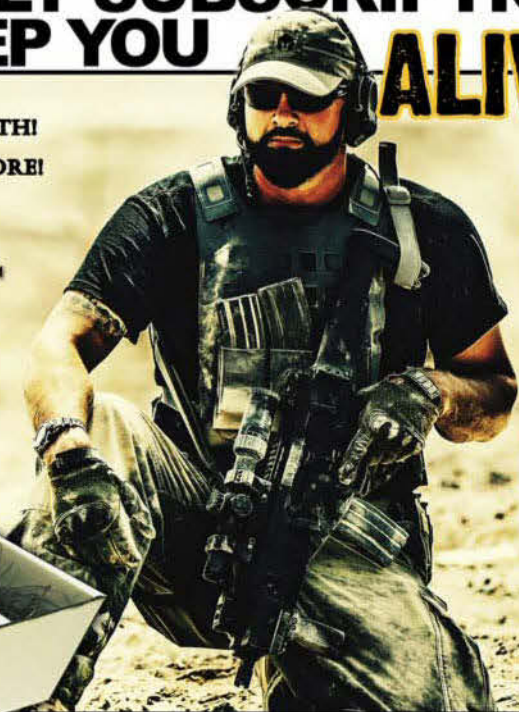
west coast the rivers flow toward the west and the Pacific Ocean. The rivers of the Plains run both east and west and empty into the Mississippi River, which flows north to south ending at the Gulf of Mexico. Water mainly runs downhill and it is at the mouths of these waterways where you’ll find human settlement. To Native people throughout the country the rivers were their highways for trade.

The lessons to learn from the Native people of this country are endless. I barely scratched the surface of what they still have to teach us. Remember Native people have been here for thousands of years prior to the arrival of the Europeans. They faced survival situations that very few can even imagine. It actually makes you wonder how much we have forgotten. **AND**

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APOCA

HOW WILL YOU SURVIVE THE END OF THE WORLD?

Story by Joe Gurrola, Tori Tellem, Kyle Chezum, John Galletta, and Carrie Visintainer



THE APOCALYPSE

IS INEVITABLE. AT SOME POINT THE EARTH AND ALL LIFE ON IT WILL COME TO AN END.

The end of the Earth will likely come billions of years from now. Over the great span of time our sun will slowly engulf the inner planets. First Mercury, then Venus and finally Earth as it turns from a yellow medium-sized star into a red giant.

Whether life is still here or not when this happens, this apocalypse won't represent the first time life on Earth was decimated. Scientists have found evidence of many prehistoric events that spelled doom for life on Earth. There were volcanoes believed to have caused the Jurassic extinction as well as events that suck oxygen out of the ocean, for example. More recently, in 1883, Krakatoa erupted killing 36,500 people. It dumped so much ash into the atmosphere the temperature of the Earth lowered by 2.1 degrees Fahrenheit. Imagine a hundred volcanoes erupting and it isn't too difficult to understand how small of a step it really is to total apocalypse.

LYPSE



Man is quite capable of destroying the planet too, many times over. There are more than 15,000 nuclear warheads on the planet, divided between nations which frequently disagree. The Earth may not be destroyed in one giant fireball, but with toxic gases or plagues of infectious diseases too. Maybe Ebola can be used as a weapon similar to how Smallpox was during Pontiac's Rebellion against the British in Pittsburg in 1736. VX, Sarin, and Mustard gas have all been used, Sarin most recently during the Syrian civil war and in Iraq against the Kurds in 1988.

Certain death can also come via a severe meteor shower or a giant asteroid. It has been proven time and again we have no control over what the future may hold, and meanwhile, the sun is slowly getting larger. The apocalypse is inevitable.

You can't survive it all but you can certainly die trying, at least delaying the inevitable for you and your loved ones. Read on for our guide to navigating the apocalypse.

PHOTO BY THINKSTOCK

WHEN

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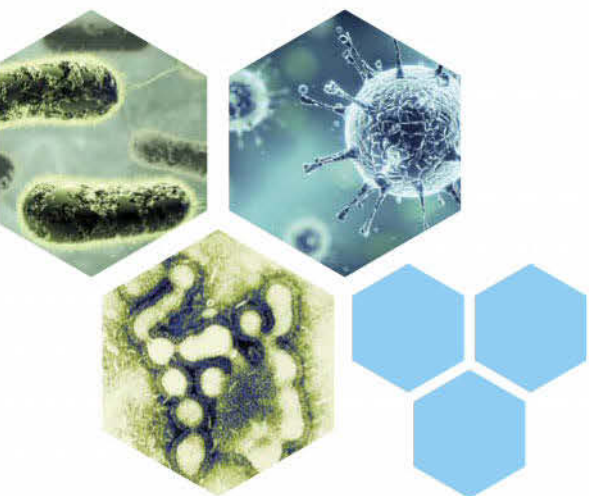
TOXIC ATTACK

CHEMICAL WEAPONS use the toxicity of various compounds to harm or kill humans. Dispersed over a wide target area, it can result in significant casualties. They are classified as weapons of mass destruction (WMDs) and can be deployed by spraying, dropping, or dumping, or by placing exposed chemicals in an area and allowing evaporation to draw it into the air.

SURVIVING

The degree to which you are prepared in advance will determine whether you live or die. Vacate the area. Grab your bug-out bag and gas mask and get to high ground as soon as an attack occurs. You'll pass right through the affected area if you try to go upwind and going downwind will only delay the inevitable. Instead, travel in a line perpendicular to wind direction. This is usually the fastest way to get out of range.

Seal yourself in if you can't get out. If you're at home when the attack occurs and you're unable to leave, immediately seal all doors, windows, chimneys, and vents with heavy plastic sheeting and duct tape. Turn off any ventilation. The goal is to stop airflow as much as possible until the chemical agent dissipates. How long this takes will depend on the chemical. Sarin gas, for example, is highly volatile and dissipates rapidly in the air. By contrast, the nerve agent VX is much more stable and can persist on the surface of an object for days or months after contact. Most chemical agents are heavier than air and will pool in low areas so do not hide in your basement.



TOXIN TYPES

There are many different kinds of chemicals that can kill you. Here is an overview.

Nerve Agents—Colorless, odorless, and tasteless, nerve agents are among the most lethal chemical agents in existence. They can be inhaled into the lungs in aerosol form or can pass through the skin or eyes to enter the body. The most well known is probably sarin.

Like all nerve agents, it attacks the central nervous system and causes muscle spasms that paralyze the lungs, making breathing difficult or impossible. Half a milligram of sarin in liquid or vapor form is enough to kill an adult. **Blistering Agents**—These chemicals cause severe burning pain and chemical burns on the skin and in the lungs of victims. Death can occur due to respiratory distress caused by damage in airways. Mustard gas is perhaps the most

infamous blistering agent.

Choking Agents—These chemicals—like chlorine gas—allow fluid to build up in the lungs and cause severe throat irritation, coughing, and other symptoms.

Blood Agents—Blood agents block the transfer of oxygen and carbon dioxide among cells, literally suffocating the body to death at the cellular level. Hydrogen cyanide and arsine gas are two weaponized blood agents.



PHOTO COURTESY OF WIKIPEDIA COMMONS

Halabja Massacre, 1988

From 1980 to 1988, Iraq and Iran waged the longest conventional war of the 20th century. Called the “Iran-Iraq War” or the “First Persian Gulf War,” the conflict began when Iraq invaded Iran in an attempt to establish itself as the dominant power in the region. During the war, Iraq employed chemical weapons to devastating effect on multiple occasions. One specific attack — the Halabja Massacre — stands out both for its destructive scope and for the nature of its target.

On March 16, 1988, Iraqi aircraft dropped chemical bombs over residential areas in the Kurdish city of Halabja. It’s not clear which specific chemicals the bombs contained, but CIA analysts believe sarin and VX were the primary agents involved, along with mustard gas. The bombs unleashed clouds of lethal gas that swept through the city and left panic, illness, and death in their wake.

The full extent of the damage is impossible to measure. In the immediate aftermath, the attack left 3,200 to 5,000 people dead and 7,000 to 10,000 others severely injured. The vast majority of those hurt and killed were civilians, including many women and children. Health complications as a result of chemical exposure killed thousands more in the years that followed.

While chemical weapons had already been used many times in the war, the Halabja attack was different. At Halabja, Saddam attacked civilians — citizens of Iraq — in order to stop a growing revolution. The international community later labeled it an act of genocide.

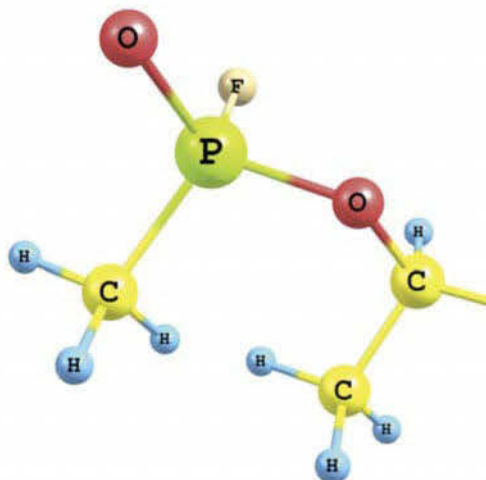
This is the time to use a gas mask or a hazmat suit if you have them. Your respiratory system is your greatest vulnerability in a chemical attack, regardless of the agent used, so put on your gas mask first. In addition to the hazmat suit, be sure to stock multiple pairs of thick rubber gloves and boots.

Test the air using a chemical agent detector. These devices are relatively compact and not too difficult to obtain. Having one in your home could be the difference between life and death.

Avoid standing water and don’t touch wet, slick, or oily surfaces. Chemical agents can cling to surfaces for very long periods of time. As mentioned earlier, the chemical VX can stick around for months before gradually evaporating, which means any surface that appears wet or oily could be harboring the deadly agent long after the air is clear.

If you’ve secured yourself in your home and you lack adequate protective gear, don’t go outside until help arrives.

“YOUR RESPIRATORY SYSTEM IS YOUR GREATEST VULNERABILITY IN A CHEMICAL ATTACK, REGARDLESS OF THE AGENT USED, SO PUT ON YOUR GAS MASK FIRST.”





“WHERE THERE WERE PEOPLE BEFORE
ALL THAT WILL REMAIN IS CARBON ASH.”

2.

NUCLEAR HOLOCAUST

A BLINDING LIGHT will be the last sight for the people too close to the fireball of a nuclear bomb. If you are close when the nuke goes off you'd be hit with a thunderous shock wave followed by intense heat and radiation. The wind and fire would incinerate everything on its bubbling path outward.

A nuclear device delivers destruction in stages. First there is the rapidly growing fireball. It delivers a burning heat to areas of exposed skin and incinerates anything combustible. An instant later the shockwave hits bringing with it heat, radiation and debris. Where there were people before all that will remain is carbon ash. All the buildings that aren't destroyed will sustain severe damage.



SURVIVING

Survival inside the critical inner rings of a nuclear detonation is highly unlikely, however, as in Hiroshima, it's possible. Your only real chances for survival, should you be within the outer areas, is to take immediate action.

Your first action should be to immediately drop to the ground in a prone position and cover your face with both hands. Stay in place until the initial blast wave and any reflected blast waves have passed. Shelter in place if the building is safe or, if it isn't, seek shelter in a fortified concrete structure. Close and seal doors and windows while also trying to minimize time spent around windows and doorways.

Moving to the center of a building may help provided the building is intact and made of concrete. Turn off any ventilation and, if you were outside and you're seeking shelter, decontaminate yourself before you enter a shelter. Brush dust/fallout off your clothing away from your eyes, nose and mouth. If you're able to, rinse any exposed skin. If you're in an unsafe area, make your way out with as much protective clothing on as you can possibly collect.

If there is no protective clothing such as Tyvek suits or respirators put on as many layers of clothing or material as possible. A damp towel draped over your head and mouth will help keep contaminants to a minimum. Putting your feet into plastic bags will help keep contaminants from affecting your feet. Evacuate upwind or crosswind.

Stay hydrated as often as possible. Drink only from new, unopened containers. Do not drink from any open areas such as drinking fountains, ponds, or streams. Commercially available water purifiers will eliminate bacteria and debris but cannot eliminate radioactive material.

Skills like first aid, navigation, sheltering, hunting, and gathering, will come in handy.



3. DEATH FROM ABOVE

A LARGE ASTEROID slamming into Earth is a question of when, not if, it will occur. It could be more than a mile wide, traveling at about 20,000 miles per hour, and it would turn whole cities into craters. Hitting the ocean would cause a tsunami wave hundreds of feet in height. The dust in the air would cause months of darkness.

There was a pause heard round the world in 2004 when an asteroid about 1,000 feet wide was spotted on an orbit that comes close enough to Earth that, initially, it was calculated to have some probability of smashing into us in April 2029. It was named Apophis after the Egyptian God of destruction. Back in 2005, Paul Chodas, an orbit analyst with NASA's Near-Earth Object office responded, "we weren't too worried, but the odds were disturbing."

The Barringer Crater in the Arizona desert is a recent (estimated to be 50,000 years old) example of an impact on Earth. The 640-plus-foot-deep and mile-wide crater was caused by an approximately 150-foot-wide, 300,000-ton asteroid.

In 1908, an asteroid about 100 feet in diameter blew up over a remote part of Siberia,

destroying more than half a million acres of forest. And in 1989, an asteroid about a quarter-mile wide and cruising at 24,000 mph came about 450,000 miles from Earth. Scientists believed the asteroid and Earth had actually passed through the same point in space by a difference of just six hours.

SURVIVE

Earth collects about 100 tons of material a day from stuff like sand and dust coming in from space. Earth does a pretty good job of protecting itself. Friction builds up on objects as they enter the atmosphere, often causing them to break up, explode and disintegrate before hitting the surface.

A larger object, however, may get through the atmosphere before the heat and pressure can disintegrate it. Then it explodes closer to the surface.

Telescopic surveys can predict where large objects would hit the Earth providing time to evacuate the area, similar to the preparation for a hurricane heading for the coast. If the object is identified early enough it might be possible to increase or decrease its speed slightly so that it misses the planet entirely.

But if a planet killer happens to make it through, survival will be a bleak prospect. Dust will blot out the sun and plants will die. Animals will die next and mankind will be left to create artificial food and light. Temperatures will fall and an ice age will follow.

WHAT IS AN ASTEROID?

Call it a speeding rock in space or call it a small planetary body and one without an atmosphere. Asteroids are usually found orbiting the sun in what's called the Main Asteroid Belt between the orbits of Mars and Jupiter. According to NASA, asteroids are thought to be "primordial material prevented by Jupiter's strong gravity from accreting into a planet-sized body when the solar system was born 4.6 billion years ago."

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4.

RISE OF THE MACHINES

TECHNOLOGY MAKES our lives easier and has helped us grow as a species. The life expectancy rate has increased by more than 40 percent in the last 100 years due to our technological advances. The smartphone in your pocket is a thousand times more powerful and a million times cheaper than the most advanced computer at MIT in the year 1970. But what happens when we get to the point where technology, instead of increasing our life expectancy, begins to diminish it?

The prospect of a reduced life span (or no life span at all) is just one possibility when talking about a potential Artificial Intelligence takeover. The disastrous results of creating an artificially intelligent supercomputer we could not control could be devastating.

This hypothetical event is often referred to as the technological singularity.

MACHINE TAKEOVER

Take a commonly used example of an artificially intelligent machine that is given the task of making paper clips. The machine could be making paper clips and realize the most efficient way to make paper clips would be to use resources humans might need. Simply programmed to make paper clips in the most efficient way possible, it might even see humans as a resource to use in the construction of paperclips. It could perceive the human desire for it to be shut off as a threat to its end goal of paper clip production too, and subsequently seek to destroy any possibility of being turned off by destroying human beings.

Obviously this is an exaggerated scenario, but it illustrates the need for significant insight into how exactly artificially intelligent machines of the future will function. Will these machines be able to understand the nuances of human desires?

SURVIVING

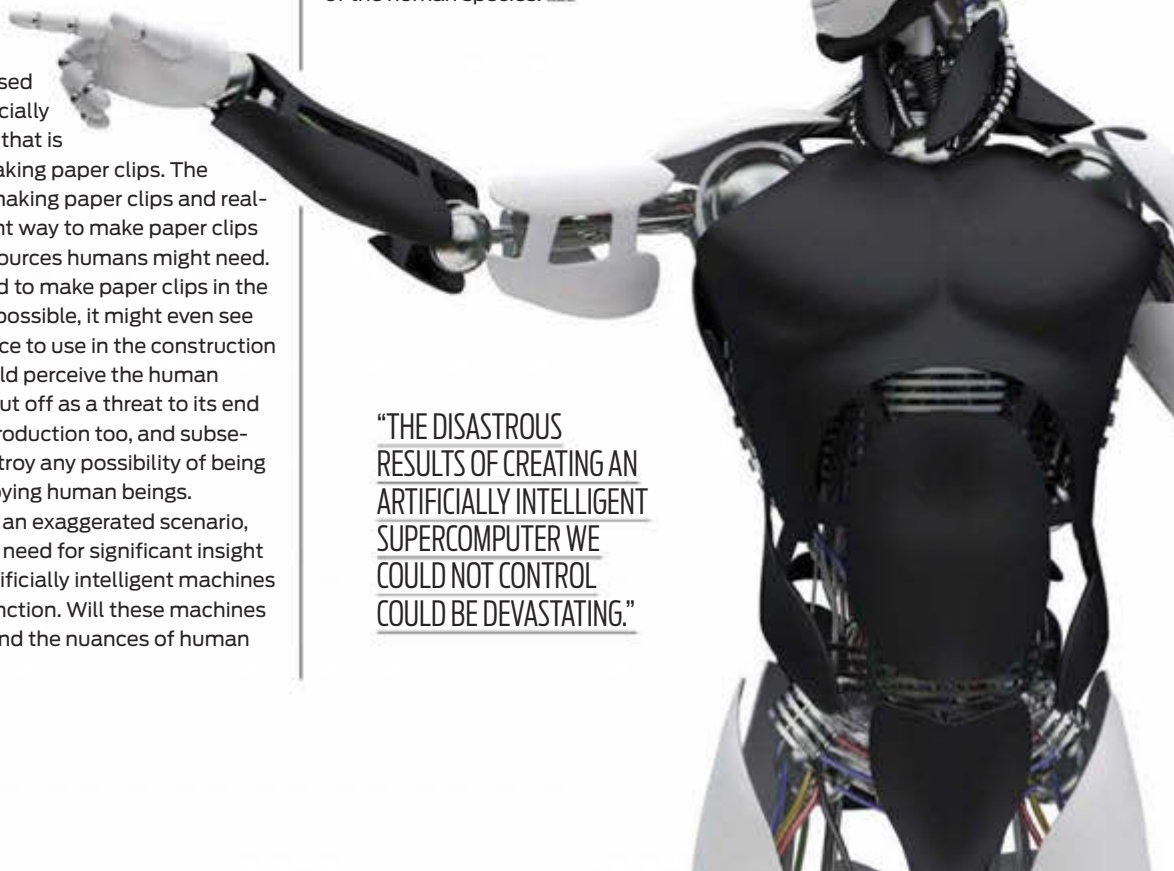
Since there has never been a recorded event of this sort, there can only be talk about the possibilities of what could happen and how we could survive. One thing we must do to ensure the survival of humanity as we move deeper into the era of AI is remember what makes us human and evaluate if our technological advances are in line with the goals we have as a species.

If the technological takeover affects only those things directly plugged into the ports over which AI controls, immediate survival depends on how far one can get from those computers and the machines it produces. In essence, mankind, through its own progress, has reduced itself to the stone age again.

Another possibility is to retrofit ourselves with machines to attain longer lifespans and higher order thinking, while still preserving our emotions and other cognitive processes. However, part of what makes us human is our curiosity and our inability to provide answers to the questions we have right away. Certain limitations seem to be an intrinsic part of what it means to be human. But as we strip more and more of these limitations away, and as we start to think differently, at some point would we cease to love like we love, and feel like we feel?

Survival means something different in that sort of world and these issues need to be taken seriously when discussing the survival of the human species. **ASB**

"THE DISASTROUS
RESULTS OF CREATING AN
ARTIFICIALLY INTELLIGENT
SUPERCOMPUTER WE
COULD NOT CONTROL
COULD BE DEVASTATING."





Carry Discreet

ELITE SURVIVAL'S CROSSROAD ESCAPE BAG

Story and Photography by Phil Tobin

The downside of a conceal carry permit is the lack of places to effectively carry a weapon in public and still enjoy a variety of clothing options. Strapping a small pistol to your hip or ankle (or with a shoulder holster) limits what you can wear when summer approaches. You will look quite conspicuous wearing slacks or a light jacket on a blazing hot day, if only to conceal your carry weapon. Not to mention, you will look like law enforcement, and half the battle of effectively concealing your weapon is to blend in with everyone around you. One way to do that is to dress appropriate for the weather and carry your weapon in the Crossroad Discreet Escape Bag by Elite Survival Systems.

Whether you are going to the range or you carry 24/7, drawing attention to your weapon is the last thing you want. You become the target

On the inside, there is enough room to configure the main compartment to host a variety of equipment, from personal items to various firearms and gear.



of thieves and those that see you as the primary threat when they've got crime on their minds and don't wish to be stopped. Having a bag that looks like a camera bag or a small piece of carry-on luggage is the perfect way to hide in plain sight.

Constructed of heavy-duty 1,000 Denier nylon, the bag has hook and loop side compartments, a padded shoulder strap and reinforced handles. Also, it features two hook and loop attachment points that can be affixed to a belt or a pack (and quickly released). The modular main compartment comes equipped with a main adjustable divider, loop-pile lining, and a variety of sizes of webbing for securing additional equipment.

The front compartment is opened with a double zipper and contains three elastic pouches, each capable of holding a handgun or a half-dozen various caliber magazines. An inner zippered pocket is perfect for personal items. The bag is built solid with quality material, evident by its three-pound weight.

Available in black or coyote, the Crossroad bag is ready to keep your carry weapons safe and inconspicuous. **ASST**



Though it only measures 14 x 11 x 5 inches in size, it feels much larger on the inside, especially considering the versatility of its design.

elitesurvival.com | MSRP: \$89.95

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WARNING – THESE SURVIVAL BAGS ARE NOT FILLED WITH TOYS





Survival in a BOX



BATTLEBOX DELIVERS SURVIVAL GEAR EACH MONTH STARTING AT \$24.99

Story by **Ryan Lee Price** | Photography by Henry Z. DeKuyper

There is survival gear to be had all over the Internet, but what gear should you buy? Where can you find it? How do you know the gear you've spent hard-earned money on is going to be worth it? These are very valid questions almost everyone has asked themselves at one time or another. You can depend on peer reviews, recommendations from others, or just downright luck, but in the end, you'll take a chance buying something that might not suit your needs or live up to your expectations.

It was thinking like this that prompted the start of BattlBox, a subscription-based service that hand-picks quality gear and sends it to your house each month. Like the jelly of the month club, only sweeter, and like a box of chocolates, you never know what you're going to get.

Started only a few months ago, Battlbox has grown exponentially since, not just because of the cool gear each month but because of the quality customer service and exciting monthly themes. Your subscription starts with Mission 1, the Welcome Kit. Included on the top of each package is an informational card that explains the "mission," introduces the theme and lists the contents.

BATTLEBOX LEVELS

There are four levels and three box sizes to the subscription service — Basic, Advanced, Pro, Pro Plus — each level building from the one beneath it.

The Basic: Priced at \$24.99, it includes around six to eight items, ranging from survival tools and manuals to emergency supplies and gear. The Basic box for Mission 2 (the theme was a hiking accident) contained fire starters, drinking water, a shemagh, sharpening stone, fuel cubes, and a carabiner keychain.

Advanced: Taking a step up from the Basic box, the Advanced box in Mission 2 includes everything above but also contains a R.A.T.S. tourniquet, a snake bite kit and a compact camp stove. The box is slightly larger to accommodate the additional gear but the value of the equipment begins to rise as well. For \$49.99 a month, the Advanced box is valued at \$69.

Pro: At the Pro level, you still get everything from the Basic and the Advanced, but for Mission 2, they've included a MOLLE transport pack to easily carry the mission's gear. For Mission 3 (water survival theme), the Pro level included an emergency water-activated emergency strobe light and a paracord grenade fishing kit. The Pro level will set you back \$99.99, but the overall value of the gear is nearly \$120. Starting at the Pro level, the shipping is free.

Pro Plus: The Pro Plus level is simple. In addition to everything else, they add a beautiful knife to the package. It's only \$149.99, but the knife usually pushes the box's value to well over \$230. In Mission 2, for example, it was a small CRKT Eros, which is priced at \$70 if you were to purchase it all by itself, while in Mission 3, the featured knife was a \$119.95 Spyderco Salt I knife.



The Battlbox subscription-based service delivers packages of gear each month in four tiers starting at around \$25.

Did we ruin the element of surprise by giving away the early missions? No, because when you sign up, those missions have passed and you may start on Mission 4 or Mission 6. You will always get the Welcome Mission to get you started, but each mission thereafter will be new, unique, creative, and exciting.

Battlbox offers gear, sure, but the real value is them culling the herd. They've found good sources for quality gear and are delivering it to your house each month, assuring you that you will, over a few short months, be well-stocked for emergencies, disasters, or whatever my befall you. Plus, it's fun. **AND**

battlbox.com
MSRP:
 Basic >\$24.99
 Advanced >\$49.99
 Pro >\$99.99
 Pro Plus >\$149.99





What's In Your PACK?

THE THINGS YOU SHOULD ALWAYS CARRY Story and Photography by Christopher Nyerges



Too many folks these days are getting lost or hurt in the local hills. We go into nature to enjoy the natural world, perhaps to seek solitude and quiet, and to get refreshed. Most of us expect to get back home safely. But getting back home safely doesn't always happen. Lots of things can get in the way of us getting home safely: unexpected weather, various accidents, unexpected terrain, or just your own inability to find your way. You should never go hiking and

exploring into the local mountains and deserts without some very basic preparedness.

First, whether you're going on a car trip or a hiking trip, do some pre-trip research and preparation. Your excitement to get out and go and your desire for spontaneity are your enemies. Slow down. Research where you intend to go, and research the weather conditions, and whether or not there will be water. Are there any trails at all? Do other people go there? Are there great temperature extremes between day and night?



What's In Your **PACK?**

fire by friction method that the Native Americans used, the hand drill spun onto a flat piece of wood – but if you've never tried this before, it's unlikely you'll be able to do this when lost. Carry that magnesium fire starter.

PRACTICAL GEAR

A knife should always be carried, at least a multi-blade Swiss Army knife. Get one that has a knife, scissors, and a saw, at least. These come in handy for countless tasks. I always carry a bundle of cord, such as the inexpensive nylon cord used for surveying. Cord has innumerable uses, and in an emergency, could be pressed into service for emergency first aid, for making a pack, for various repairs, and many other possibilities.

A small first aid kit with at least a lot of Band-Aids and perhaps a few anti-infection creams should be included. In fact, you should enroll in a Red Cross emergency first aid course because “first aid” is more about knowing what to do, rather than knowing what to do.

A signaling mirror is also a good idea for a small daypack. They are small, and could also be used for certain first aid applications. They are not expensive, and come in glass or metal. Also, the used hard drive platters from computers are nearly unbreakable, and make excellent signaling mirrors.

You probably already carry a cell phone, which is great for emergencies. However, there is often no cell coverage in many wilderness areas, and your battery will not last very long in cold weather.

Compass? Yes, carry one along with the map of the area you intend to visit. But remember that the compass is of no value if you haven't taken the time to learn how to use it with your map.

SLEEPING OUT

Though tents and sleeping bags are too bulky to carry in a daypack, you should at least consider the possibility of spending the night in the wild. What would you do? Knowledge of making a wilderness lean-to, or other expedient shelter, is a good idea. But for the pack, you should consider carrying a little

emergency space blanket, which is not fantastic, but certainly better than nothing. If you have a slightly bigger pack, consider adding a tube tent. Tube tents are lightweight, inexpensive, and fold fairly flat.

You should also add some simple snacks to your pack. These wouldn't be your lunch, but just something to eat “just in case.”

Back when I first got interested in survival preparedness, I'd have long discussions with the folks at the Wilderness Training Institute (a non-profit concerned about the full picture of survival) about the necessity of always having a pack ready in case you ever had to make a quick evacuation or in case you got lost in the woods. Knives, tools, water, clothes, fire, shelter, light – these are the areas of greatest concern. We agreed that the ideal survival pack should be lightweight and not a burden. We learned that the more you knew, the less you had to carry. And yes, there are many, many more items that hikers could carry, and many do. But the above represents the bare-bones minimum that anyone traveling on foot should carry.

Here is the list that we developed over many years. Of course, you should not blindly follow anyone's list, but just use it as a way to consider your own needs.

PERSONAL TO-BRING LIST

This particular list was developed over the span of 20 years and is based on the WTI and the School of Self-Reliance field trips. It assumes you may have to live out of this pack for more than a day, and maybe even longer, so this is not just a simple day-bag. This pack also assumes that you have the knowledge and skills to do and make things with the tools in your pack, and that you have the knowledge of plants for food, fiber, etc. Any kit should be modified to fit your personal needs and circumstances.

Pack: Your pack must be comfortable. It should have padded straps, and a waist strap.

Sleeping Bag: Though a sleeping bag is optional on our overnight trips, we recommend it because, in some areas,

there may not be enough natural materials to allow everyone to make a lean-to with insulation. If in doubt, ask us in advance.

Clothing: Always dress comfortably, and dress in layers. It is easy to add or remove a layer of clothing as the weather permits.

- Rain protection (if needed)
- Sun protection (hat, eye glasses)
- Comfortable shoes, moccasins, or boots
- Hand protection
- Extra shoelaces
- A large bandanna has many uses

Sewing Kit: This should include needles, various thread, an awl, small scissors, and safety pins. Kevlar thread is virtually tear-proof.

Compass and Maps: Having a good working compass and a practical map (i.e. a topo) of the area will provide you with a vast wealth of knowledge about your surroundings.

Notepad and Pencil: Sometimes, jotting down notes or keeping a journal of your experience will help provide some mental clarity and keep your brain working and preoccupied if boredom or fear sets in.

Water: Of course, it's essential to have access to water. Also include iodine for purification and a water-filtering device.

Eating Utensils: Though these are definitely optional — you can make a plate from bark and a fork from a sharp stick, it is nice to have some cleanable utensils if you can spare the room.

- Sierra Cup (or equivalent)
- Large coffee can with a wire handle
- An old pie pan can be used as a bowl or frying pan

First Aid Kit: A conventional first aid kit should be augmented with a small container of raw honey, a container of raw vinegar, and one leaf from an Aloe Vera plant. Also include something to deal with chapped lips and hands, like castor oil or other skin moisturizer. Also consider the snake bite kit if in rattlesnake country.

Sharpened Gear: There isn't enough room in this article to explain how important it is to have a knife with you at all times. However, there are a few more recommended tools.

HOW TO PACK YOUR PACK

KNOWING HOW much gear you need to carry depends on several factors, namely, your environment, your skill base, and your personal needs at that point in your life. If you live out in the middle of nowhere and have to drive or walk a mile just to check the mailbox, you may want to consider more gear tailored for longer stays — perhaps include some snacks. However, if you live in and rarely leave the bustling city, your personal items should be more urban — protection from people, germs, debris.

When packing the items into your pack, consider weight and frequency of use. Heavy items, of course, should go on the bottom, but also take note of the balance. You'll want to spread out those heavy items to either side of the pack so the weight is not favored on one side or the other. This will put undue pressure on one shoulder and cause abnormal fatigue. Items that you think you might frequently use — things like the first aid kit, snacks, compass/map, gloves, and flashlight — should go on the top or in outside pockets so they can be retrieved quickly and without hassle. Tarps for shelter, extra clothes, rope, and fire starting equipment will be used infrequently and should reside further into your pack.

Backpacks with compartments work best, as it is a good idea to stay as organized as possible. This eliminates confusion and under utilized gear due to forgetfulness and promotes efficiency.

- Folding shovel
- Heavy-duty sheath knife or lockback
- Multi-blade Swiss Army-type knife
- Both a stone and a steel sharpener are recommended
- Small folding camp saw
- Ratchet garden clippers

Weapons: This is a personal choice to carry a firearm or a silent weapon, such as bows, booms, bolas, blowgun, atlatl (spear thrower), etc.

Fire Starters: Next to a source of water and a knife, ways to start and maintain a fire are paramount. It provides a way to cook food, create light, and offer comfort in the dark.

- A butane lighter
- Magnifying glass
- Magnesium fire starter

Also consider preparing a waterproof tinderbox. Pack it with the finest (grade 000 or 0000) steel wool, cotton stuffing, "fatwood," oiled and waxed sawdust, dried mugwort leaves, etc. If you don't have these, you can collect tinder along the trail in a plastic bag.

Personal items: Though they can be done without in an emergency situation, it is nice to have a few creature comforts to maintain an element of civilization.

- Toilet paper or a pack of tissues (or learn how to collect your own — keep your eye out for mullein, aka "cowboy toilet paper")
- A natural bristle brush — for "dry-washing" your body when water is scarce.

Cord/rope: Pack about 15 to 20 feet of lightweight nylon cord or rope (and/or paracord). For an easy solution, buy a length of clothesline at the hardware store. It can even be used for fire starting.

As you put together your gear, keep in mind this pack is an everyday carry. It doesn't do you any good to toss it into the back of your closet and forget about it. Keep it in your trunk when you commute or travel, grab it for a quick day at the park, and make sure it is readily available at a moment's notice. The first key element to survival is to be ready and to be ready quickly. **and**



BURN, BABY, BURN!

WHICH TYPE OF TINDER BURNS THE LONGEST?

Story by **Jim Cobb** | Photography by Tammy Cobb

The ability to get a fire going in adverse conditions is absolutely critical to survival. To make fire, you need three essential ingredients. The first of those, *oxygen*, is likely in ready supply. If it isn't, you have far bigger problems on your hands than getting a fire started. *Ignition* comes from your butane lighter, ferrocium rod, flint and steel, or perhaps a bow drill if you want to get primitive. That leaves the third ingredient, *tinder*.

In many circumstances, you'll be able to scrounge natural materials to use as tinder, such as chaga fungus, birch bark, or cattail down. A great idea is to keep a small plastic bag in your pocket or pack and when you stop for a break along the trail, take a look around for some natural tinder. Keep it in the plastic bag for use in building a fire to cook later that day.

That said, Mother Nature can be a cruel mistress. It might turn out that the one time you really *need* to get a fire going quickly, that will be the same day that it has been raining for hours on end and you can't find any dry sources of natural tinder. Therefore, it only makes sense to carry some ready-to-light tinder with you. We chose five different products to test, along with one homemade selection.



Instafire

TIME OF BURN:

4:31

\$1.88 per pouch

\$69.99 per 4 gallon bucket

instafire.com ✓

» Instafire has been around since about 2008. It consists of volcanic rock, wood pellets, and paraffin. Very lightweight, each pouch comes with enough of the product to light approximately four fires, yet weighs less than two ounces. To use, a small quantity is poured out and lit. In order to keep our comparisons as fair as possible, our pile was roughly the same size as the other fire starters in our test group. There were no issues lighting it at all.

Instafire is waterproof. In previous tests, I was able to light a pile of it in my hand, then, still burning, float it in a bucket of water. You won't need the entire contents of one pouch to start a single fire so you'll have to have another container for the leftover mix. You could divide the contents of a pouch into a few different 35mm film canisters or other such containers before you hit the trail.



Mini Inferno

TIME OF BURN:

5:15

\$7.99 for 6

selfrelianceoutfitters.com ✓

» Produced and sold by Self Reliance Outfitters, a division of The Pathfinder School, LLC, the Mini Inferno fire starter arrives in a small, circular tin. Inside the tin is a small stack of waxy, fibrous disks about two inches across.

The instructions are to peel open a disk, exposing the fibers inside. This was quite easy to do, actually, as the disk seems almost to have layers to it. We peeled it open about halfway, then lit it up. Within perhaps a single second, we had very hot flames reaching several inches high.

Each disk can be easily cut into smaller pieces, allowing for several more fires. The Mini Inferno fire starters are also waterproof, which is always a bonus when we're talking about getting fires going in bad weather. With the resulting flames as high and hot as we had, there shouldn't be any trouble getting kindling burning quickly.



Survive Outdoors Longer Tinder Quik

TIME OF BURN :

1:40

\$4.00 for 12

adventuremedicalkits.com ✓

» The SOL Tinder Quik product is found in many commercial survival kits as well as being available for purchase on their own. They are tightly woven bundles of fibers about an inch long and very lightweight.

Before lighting, you're supposed to take one end of the Tinder Quik and pull the fibers apart and fluff them up a bit. This is easier said than done as there just isn't much loose material to grip at first. We did okay but I could see it as being a real challenge if you were shivering and had numb fingers. The Tinder Quik did light immediately, though, without any trouble.

The Tinder Quik tabs work fairly well. They are easy to light and are so small they can fit just about anywhere in your various survival kits. But, because they are so small, they don't burn very long and could be difficult to use with cold, trembling hands.



BURN, BABY, BURN!



WetFire

TIME OF BURN:

8:04

\$9.00 for 8

USTbrands.com

» Another survivalist mainstay, WetFire cubes, have been around for quite some time. Each white cube is individually wrapped and measures roughly an inch on each side.

Once taken from the wrapper, you can light the cube as is or you can shave some of it into a small pile and just light that rather than use the entire cube. Again, in trying to keep the tinder comparisons consistent, we used one whole cube. It lit easily and burned with a very hot flame.

There is a lot of heat energy packed into these little cubes. The cubes can be cut into small pieces to use for more fires but you'll need to have some sort of container for them.



"THERE IS A LOT
OF HEAT ENERGY
PACKED INTO THESE
LITTLE CUBES."



Live Fire Sport

TIME OF BURN:

11:35

\$7.95

livefiregearllc.com

» The Live Fire product comes in two sizes, Original and Sport. Both arrive in small metal tins with sliding covers. The Sport tin is about two inches long and an inch wide. Inside the tin, you find yellow fibers that are impregnated with flammable chemicals. The design of the tin, with the sliding top, is such that you could close it up once your fire is going, saving the rest of the Live Fire material to use later.

The instructions say to open the tin and fluff up the fibers, then light them with a flame or spark. I roughed up the fibers and set to work. Unfortunately, the Live Fire resisted every effort to start burning. In the end, I removed the cover completely and held the flame from a butane lighter directly on the fibers for several seconds before the fire starter finally lit. Once it took, though, it burned what seemed like forever with an extremely hot flame.

I was disappointed in the difficulty of lighting the Live Fire. I've read several reviews that rave about the product and the ease of lighting but that simply wasn't my experience. It did, however, produce easily the hottest flame of our test products.





Homemade

TIME OF BURN:

2:44

Nearly **free**

»Perhaps the single most common home-made fire tinder consists of cotton balls soaked in petroleum jelly. There's a good reason they are so ubiquitous – they work! If you've not made them yourself before, simply take a small handful of cotton balls and place them into a plastic sandwich bag. Add a healthy dollop of petroleum jelly and mash it all together for a while, until the cotton balls are fully soaked with the jelly. Very simple, yes, but admittedly very messy, too.

Take one cotton ball, fluff it up a bit, and light it with the ignition device of your choice. It will take a spark or flame very easily.

The biggest problem with the jelly-soaked cotton balls is the mess involved. You can't help but get the jelly on your fingers, though there is a bit of a trick you can employ to make things a little easier on yourself (see sidebar). That said, they burn for close to three minutes on average. You can pick up a bag of cotton balls for a buck or two and a small jar of petroleum jelly at the dollar store. Added together, your final cost per fire starter is maybe a penny at most.



**"THE BIGGEST
PROBLEM WITH
THE JELLY-SOAKED
COTTON BALLS
IS THE MESS
INVOLVED."**



Storing Cotton Ball Fire Starters

HERE'S AN EASY WAY to keep your homemade fire starters readily accessible without a lot of mess. Pick a container, such as an old 35mm film canister or prescription bottle. Here, I'm using a waterproof match case I picked up from SurvivalResources.com.

After making a batch of fire starters, take a length of thin cordage such as bank line and tie it to one of the cotton balls.

Stuff that cotton ball down into the container, making sure to keep the loose end of the line outside.

Continue filling the container to the top.

The line should be thin enough to allow you to still close the container with the line draped outside.

Now, when you need a new fire starter, simply open the container and tug on the string. The whole stack of cotton balls will move up, allowing you to just grab the top one for your fire.

ASB

DIY Water Filter

CONVERT THAT MURKY SLUDGE INTO A CLEAN DRINK

Story and Photography by **Larry Schwartz**

Water is one of life's essentials. It ranks up there right after oxygen as something we cannot, for very long, live without. We need water for digesting our food, for making blood, transporting nutrients and removing waste materials, regulating our temperature, and building cells. Without it, we get weaker, stop thinking clearly, and develop muscle cramps. Eventually, the lack of water will affect your ability to function, and you will die.



FINDING WATER

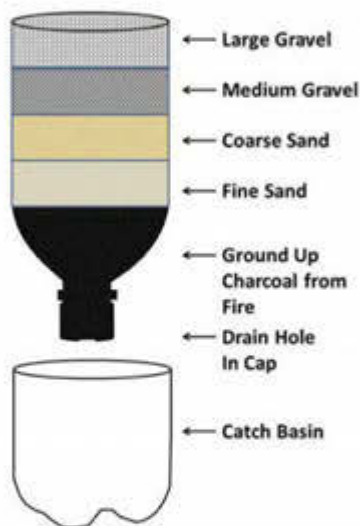
You can find water in even the most inhospitable of places, even the desert. Look around. If there are any kind of plants growing or any animals at all, they all depend on water to survive, which means that water is present somewhere. The trick is to know where to find it.

- > Dig into the far bank of a bend in a dry stream bed. Since that is where the water was hitting the bank with the most pressure, some moisture will be farther into the soil there.
- > Look for pools of water at the base of cliffs and in shady areas. Water will tend to settle into the low areas and if they are shaded it will last there longer.
- > If you see thriving vegetation where the rest of the area is barren and brown then there is probably a subterranean water source there. Dig down in low areas and you might find water, even if it is just moist soil that you can squeeze moisture out of.
- > If the area you are in has valleys or canyons check out the north facing slopes of these areas as they receive less direct sunlight and water tends to accumulate there.
- > If there are large, flat rock formations in your area check to see if water has collected in depressions on top of the rocks. If they are in a shaded area they can hold water for a long time after a rain has deposited it there.
- > The last tip is to keep an eye out for birds, animals, and insects; if you haven't seen any wildlife for a while and then suddenly you do then you have likely found a source of water. Wildlife would not be there if there wasn't something they needed in the area.

Once you have found a source of water you need to do three things; collect it, filter it, and purify it. You can collect it in any variety of things like cups, canteens, water bottles, plastic baggies, or empty beer cans you may find along the trail. A point to remember is to always bring your own water with you and to have something to store it in. If you need to find and treat your water, be sure to have a container for your



Seeing animal life and blooming plants in an area when you had not seen any in other areas is a good indication that there is a source of water nearby. Check depressions and shaded areas for surface or subsurface water.



(above) Your water filter works by using multiple layers of filtering materials, each designed to catch smaller and smaller bits of particulate materials. A two-liter water bottle is perfect for making your DIY water filter, but a food safe container of any size can be used if you need to filter larger quantities of water.

untreated water and another to drink from for your potable water.

FILTERING WATER

The well-prepared individual or survivalist will have some way to store and purify water. In addition to my normal water supply that I carry in either a backpack reservoir or one liter bottle like you find in the grocery store, I also carry the means to make bad water good; either a pump water filter that will clean out sediment and microorganisms, or chemical pills or drops that will purify the water for me. I also carry a paper coffee filter to take care of the big particulate matter in the water before I try to purify it.

But, sometimes all you have with you is your empty water bottle and what you can see around you. Well, all is not lost and the desert is full of materials you can use to make a DIY water filter that works much like the one you have on your home water faucet or in your emergency backpacking water filter. To make your water filter you will need:

- ✓ A knife
- ✓ A 1-liter or 2-liter water bottle, preferably clear
- ✓ Charcoal (more on this later)
- ✓ Large gravel/rocks
- ✓ Medium gravel/rocks
- ✓ Small gravel or coarse sand
- ✓ Fine sand
- ✓ Packing materials (fabric, vegetation, wood chips)
- ✓ A piece of cloth
- ✓ String or a rubber band



Five simple elements go into making a water filter system: charcoal, rocks, gravel, coarse sand, and fine sand.

DIY Water Filter

To turn this hodgepodge of materials into a water filter you will:

1. (image a) Cut the bottom off a 1 or 2-liter soda or water bottle to serve as a catch basin for your filtered water. You can also use another bottle or container as your storage vessel that you will fill from your catch basin. The advantage of this approach is that you can filter the water more than once if needed to get it as clear as possible.
2. (image b) Bore a hole in the bottom of the bottle cap for the water to drain out. You may need to experiment to find the right size hole, but start with a quarter-inch hole and make it bigger if you need to.

"IF YOU HAVEN'T SEEN ANY WILDLIFE FOR A WHILE AND THEN SUDDENLY YOU DO THEN YOU HAVE LIKELY FOUND A SOURCE OF WATER. WILDLIFE WOULD NOT BE THERE IF THERE WASN'T SOMETHING THEY NEEDED TO KEEP THEM THERE."

3. Place a layer of fabric at the neck of the bottle to serve as a final filter and to keep everything else in place. Hold it in place with a piece of string or with a rubber band.
4. If you have some kind of packing material you can put them in at this time to keep the charcoal that goes in next from falling out.
5. (image c) Add a one inch thick layer of charcoal next. This is where the majority of the filtration takes place and it is also where some purification happens. Charcoal is the black outer layer on a burnt log in your campfire. Scrape it off of the burnt logs and grind it up until it is as fine as you can make it. A caution though, ashes do not have the same properties as charcoal so do not use them in your water filter, all that will do is give you gray water that tastes horrible.
6. (image d) On top of your layer of charcoal add a layer of fine sand to serve as your filter for fine particulate materials.
7. Then add a layer of coarse sand to serve as the filter for larger particulate materials.





SODIS (Solar Disinfecting) allows people to purify their water supplies where water purification technology is expensive, like for people in third world countries, or when it is not available, like for hikers stranded in the desert.

8. (images e,f) Then a layer of small gravel, and then a final layer of larger gravel as the top layer of your water filter.

9. (image g) Each of your layers should be at least one inch thick in order to catch all the materials of the size for which it is designed.

This method works with 1- or 2-liter water bottles but it will also work with larger containers like gallon jugs, plastic barrels, large plastic bags, or metal containers. Anything that you remove the top from, and put a hole in the bottom of will work.

To use your DIY water filter hold the filter in one hand (image h), with the catch basin made from the bottom of the bottle on the ground, and pour the dirty water through the opening in the top and let it filter its way through the various layers to remove ever smaller particulate material from the water. Once it gets to the charcoal there shouldn't be much of anything left in the water and the charcoal can do its work on the microscopic organisms that might be in it. As mentioned above, make sure you only put dirty water in your non-drinking water container and only put filtered and purified water in your drinking water container.

PURIFYING WATER

The charcoal in your filter should catch most of the microorganisms in the water, but it may not catch the smaller ones or the viruses. To take care of them you can use one of the desert's most abundant resources, direct sunlight. The SODIS method of water purification, short for Solar Disinfect-

ing, uses sunlight to kill the bacteria and viruses in water. To purify with the SODIS method:

- 1.** You put water in clear, colorless, glass or PET type plastic bottles, filled three-quarters of the way up. Colored plastic will block the ultraviolet rays in the sunlight which are what do the actual disinfecting.
- 2.** Shake each bottle to add some oxygen to the water. This facilitates the action of the ultraviolet rays.
- 3.** Then lay it flat and leave it out in direct sunlight. Laying it flat ensures that the same amount of sunlight reaches the water in every part of the bottle.
- 4.** Keep it in direct sunlight for at least six hours, such as from morning to evening, but preferably the whole day. If it is overcast, two days is recommended.

SODIS has an additional benefit in a desert survival situation because you need to leave the bottle stationary in the sunlight for it to work. This forces you to stay put during the day in a shady area while the water is disinfected, then you can do your travelling at night or at dusk and dawn when it is cooler and there is less direct sunlight to cause you to lose more water.

This two-step process will not remove chemical pollutants in your water, but the filter will remove the particulate material and small organisms from the water. Using the SODIS method will kill the bacteria and viruses that might be in there. Also, if you are in the desert then chemical pollutants are likely not going to be an issue. **ADD**



Make sure the charcoal isn't ashes or dust, as that will just wash out into your clean water.



The largest rocks will keep the largest sediment from seeping down into your clean water.



The small gravel compacts into the filter, making it more difficult for foreign material to travel down into the bottle.



Small but coarse sand fills in the gaps and creates a thick barrier to small pieces of debris found in water.



The finest sand, easily found in the desert will all but stop the water allowing it to slowly percolate through the tiny spaces between the grains.

Sharp Companion

THE BUCK FRONTIERSMAN IS A KNIFE FOR OUTSIDE THE CITY LIMITS

Story and Photography by James E. House



Life on the frontier in early America was a day to day survival test. Protection was largely an individual proposition, and procuring and processing food was a frequent task. In many ways, life in the 1800s was very similar to that faced in survival situations today.

When we look at the everyday tools of early settlers, it becomes obvious that a firearm, axe, and knife were almost always close at hand. Although small knives were certainly used, the knife carried was usually large and sturdy. That is precisely the type of knife chosen today for survival situations.

There is no shortage of large knives, which I regard as those having blades that measure at least half a foot in length. One of the large knives that is most appealing to me is the Buck 124 Frontiersman, and it would certainly have been an excellent choice for a frontiersman in early America. Although described as having a 6.25-inch blade, my Buck Frontiersman has a blade that measures 6.75 inches from the front of the hand guard to the tip, and it almost seems larger. The large aluminum hand guard and generous grip contribute to the overall size of the knife as does the wide blade that measures 3/16-inch in thickness. For most of its length, the blade is almost 1 3/8-inches wide so it is a very strong blade. It is full thickness for approximately one-half inch from the spine and then is hollow ground, as is the custom on most Buck knives. For many years, Buck has made blades of 420 HC stainless steel that is specially heat-treated to give a hardness of 58 on the Rockwell Hardness scale. Such blades have the hardness and corrosion resistance to make them suitable for many tasks while retaining sharpness. The knife also has a tang that extends the

entire length of the handle and ends with a well-shaped aluminum butt cap. Shallow grooves are placed along the bottom edge of the grip. The overall length of the Buck Frontiersman is almost exactly one foot.

The Buck Frontiersman has been produced for many years and numerous variants have been available. As currently produced, the Frontiersman has black Micarta scales, but my knife was made approximately 25 years ago, and it has rosewood scales that are pinned in place. In the intervening years, the Frontiersman has been available with scales made of various woods, stag, and Micarta. Special editions have also been produced in limited runs at various times.

For a knife as large as the Frontiersman, a sturdy sheath is required and the one furnished with the knife meets that requirement. It is made of heavy black leather and has a durable retainer that circles the handle and snaps securely. The sheath is classic in design and, therefore, has no holes or other provision for attaching other gear.

The weight of the knife itself is 13.3 ounces, but with the large, comfortable handle enclosing a full tang that adds weight, the knife balances very well and does not feel “blade heavy” in the least. For such a large knife, it actually feels nimble in the hand.

Even though I prefer to do my chopping with an axe or hatchet, the Buck Frontiersman is up to that task as well as splitting wood. The blade is designed with a straight top edge and the bottom edge is straight for about four and one-half inches then sweeps up to a rather sharp point. The overall blade design is appropriate for many uses, and it is a substantial piece of survival equipment. However, when in remote areas, I also carry a small folding knife for more delicate tasks.

At \$200, it represents a good value for someone seeking a high-quality, durable knife for heavy use. It is not a knife for cleaning your nails, but it sure is reassuring when you know that a lot may depend on the knife you are carrying. ■■■

buckknives.com | MSRP: \$200



The Frontiersman has a hollow ground blade measuring approximately 6¾ inches in length.



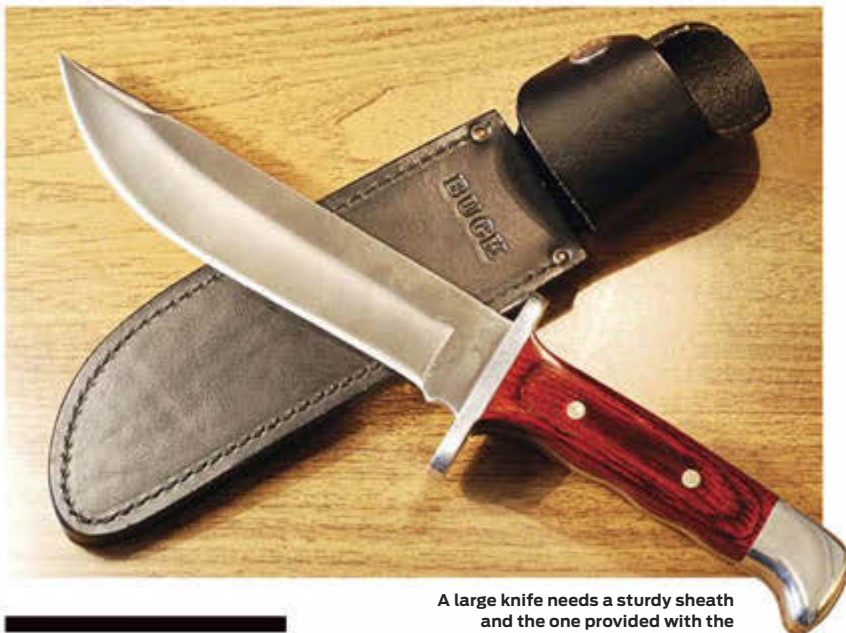
A useful feature on a large, heavy knife is a hand guard that provides a lot of protection, as does this one on the Frontiersman.



A tang that runs the entire length of the handle is utilized on the Frontiersman and it has the same thickness as the blade.



On my older Frontiersman, the scales are made of rosewood, but current models employ black Micarta.



A large knife needs a sturdy sheath and the one provided with the Frontiersman is just that. Although a Buck Frontiersman and its sheath are hardly compact, the performance matches the size.

Specifications

Blade length: 6.75 inches

Blade thickness: ⅜-inch

Composition: 420 HC

Overall length: 12 inches

Weight: 13.3 ounces

Handle: Rosewood (now Micarta)

Sheath: Heavy black leather





PHOTO BY THINKSTOCK

FUEL

for the Long Haul

CONSERVING CALORIES AND ENERGY TO SURVIVE

Story by **Nikki Grey** | Additional Photography by Jessica Crandall, Tony Nester, and Robby Barthelmess

In just a matter of minutes, a quick hike up a mountain can lead into a life-and-death struggle for survival. Mother Nature is unforgiving when it comes to the circle of life.

Jessica Crandall, dietitian and spokesperson for the Academy of Nutrition and Dietetics, had a two hour bike ride in the Fort

Collins, Colo. area turn into an eight hour ride because of road closures. Worse yet, she remembers a family hike on the San Carlos Trail in Beulah, Colo., as a child that went wrong due to a map miscalculation that resulted in being lost, some injuries, and hunger. The ordeal lasted for 24 hours until search and rescue found them.

"WE HAVE THIS BASAL METABOLIC RATE THAT WE HUMANS HAVE TO MEET EVERY DAY; IT'S ABOUT 1200 CALORIES A DAY FOR THE AVERAGE ADULT."

"It was not the trip you'd ever want to go on, so planning and preparing is key," Crandall said.

In a survival situation, even if you have planned ahead with food and water, you still need to be smart about how you use it.

Calories Count

"When you know...you're going to be gone for a long period of time, I would just kind of take an inventory of what I have and plan for the worst," Crandall said.

She tends to pack for 24 to 48 hours, about three times more than what she needs. This includes spacing out food.

"I would plan for eating every four to six hours a meal [designed to] help keep my energy level stable," she said.

Examples include eating a serving of nuts, such as almonds, walnuts and pistachios, with a serving of dried fruit. The nuts would be the protein and the dried fruit would be the carbohydrate source. Another option is eating tuna or jerky for protein. Crandall recommends a serving size of two to four ounces.

Crandall says people can live up to 21 days without food, but some die sooner because they don't have weight reserves. Most people won't survive more than three to four days without water, she says, but there are reports of some individuals lasting up to seven days.

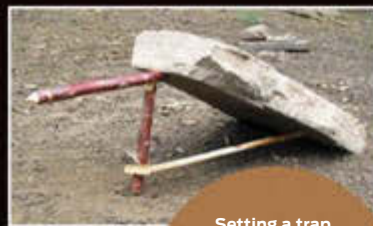
What Happens When You Run Out?

If you run out of food, depending on the situation, going out and finding it might not be the best idea, according to Tony Nester, founder of Ancient Pathways, an organization that offers courses in wilderness survival, primitive skills and bushcraft.

TWO WAYS TO STAY ALIVE

If you end up needing to feed yourself in the wilderness and you don't have anything to eat, there are two approaches: active and passive.

"Active is where you're moving across the land actively looking with a bow and arrow or a rifle (or other weapon) looking for deer or elk," said Tony Nester, a survival teacher. "Passive means setting up snares and traps and leaving them overnight. That system (passive) is way more calorie-effective and way more efficient from a physiological standpoint."



Setting a trap is a passive way of harvesting food. It requires little physical effort on your part, therefore conserving energy.

PHOTO BY TONY NESTER

"We have this basal metabolic rate that we humans have to meet every day; it's about 1200 calories a day for the average adult," Nester said. "If I'm putting out more calories than I'm getting back then that's not going to be a good situation."

If that's the case, Nester says, rather than trying to find food by hunting or looking for berries (which you need to be trained on what you can eat safely anyway) "you're better off holing up in your shelter and fasting because your body will tap into both its protein and fast reserves. That's key because



Dried fruit, which travels well, is a wonderful source of carbohydrates, whereas nuts, such as almonds, walnuts and pistachios are a great source of protein.



PHOTO BY ROBBY BARTHELMUSS

How to Think of Water

Consuming too little water causes dehydration and the person suffering from it in hot weather will eventually die from heat stroke. But if someone drinks too much, this will cause “diluted blood sodium or hyponatremia,” says Tom Myers, who has worked for 25 years at the Grand Canyon Clinic as a physician. If left untreated, that also can lead to death.

So, the physician says, “only drink when you are thirsty.”

“The deficit must be eventually made up and only builds,” he said. “In survival situations when water is scarce or limited, minimizing eating or not eating at all (especially salty food) until sufficient water is found can buy time and help make water “last longer.”

This is because no water is used for digestion, he explains, and this can probably be done only for a few days maximum.

“It is a trade off, as we need food for fuel,” he said.

To slow “excessive evaporation and water

loss from the skin” leading to dehydration, cover up with light colored, loose fitting and breathable clothing, such as cotton.

“Wet your head and shirt, when you can, even with bio-contaminated water,” he said. “It helps with evaporative cooling to keep core temperature down, and helps with mood by negating some of the oppressive feelings of heat.”

Myers recommends estimating how long a hike may take from start to finish and to “factor in the air temperature.” He cites instructions from Edward Adolph’s “Physiology of Man in the Desert”: 1/2 liter per hour at 80 F; 1 liter per hour at 100 F; and 1.5 liter per hour at 110 F.

“In other words, fluid needs triple from 80F to 110F,” he says. “And fluid needs are less at cooler temps.”

If it is a matter of life or death, Myers recommends people should drink bio-contaminated water.

“Water-borne illnesses usually take a week or longer to kick in and these are typically easy to treat,” he said.



PHOTO BY THINKSTOCK

(above) **A handful of beef jerky (roughly 10 ounces) has about 1,200 calories, by far one of the best calories-to-weight trail foods.**

“FLUID NEEDS TRIPLE FROM 80F TO 110F...AND FLUID NEEDS ARE LESS AT COOLER TEMPS.”

— TOM MYERS, GRAND CANYON CLINIC PHYSICIAN

you’ll last about 25 percent longer than the person who is just going out and getting the occasional grub squirrel or cricket and not exceeding that 1200 calories a day.”

If you put out more calories than you take in, your body will start consuming its lean muscle mass and fat, says Nester, who has provided survival training for actors such as Emile Hirsch for “Into The Wild.” People can go 30 to 40 days without food in an outdoor setting, with exceptions of people lasting longer, Nester said.

“It is possible under the right conditions,” he said.

Water is a different situation, however, and different strategies are needed to prolong life without it. **ASB**



(right) **A small can of tuna has about 200 calories in it, which you will burn off in about an hour’s worth of walking.**

(below) **If you’re in the desert without a lot of options for food, fast to stay alive longer.**



PHOTO BY THINKSTOCK

HOW TO MAKE A VISOR OUT OF A BANDANNA

HOMEMADE SHADE

Story by **Nikki Grey** | Photos by Robby Barthelmess

WHEN YOU'RE OUTSIDE, especially in the desert or bright snow conditions, protecting yourself from the bright sun should be among your top concerns. Overexposure to sunlight can do a number of detrimental things to you: It can cause sunburn or sun poisoning with symptoms including blistering, swelling, nausea, dizziness, headaches, fever and chills, as well as dehydration.

Eyes, too, can get sunburned from extensive UV-light exposure, causing Keratitis (including snow blindness). Symptoms of an inflamed cornea include eye pain, redness, blurriness, tearing, sensitivity to light, eyelid twitching, seeing halos, headache and temporary vision loss.

Sunglasses, hats and the like exist to prevent damage to the eyes. But if you find yourself outside without any of these, you can make a bandanna visor.

Lightweight and easy to pack, bandannas or handkerchiefs can be used to make a visor to shade your eyes and face. Even if you aren't stuck outdoors for a long period of time, you could still find use for a bandanna visor anytime you forget your shades at home. **ASG**



1. Fold the bandanna in half diagonally, so it looks like a triangle.

2. Roll the folded edge over twice, keeping the folds tight. You can roll the edge over more times, according to your preference, as long as most of the triangle remains unrolled.

3. Take the top triangle piece and pull it back over the rolled edge.

4. Tuck each triangle end into the center of the bandanna.

5. Fold the top layer back over to where it was before, making sure both corners are tucked inside. Next fold the bottom edge over one more time. Make sure the corners stay tucked in tight. Keeping the rolled edge (the visor) out, tie the ends of the bandanna behind your head. Adjust the bandanna visor to preference.

Gear Guide

Backpacks

Story by Phil Tobin | Photography by Henry Z. DeKuyper

WHEN ATTEMPTING TO PREDICT THE UNKNOWN, it is best to be prepared for anything. And that means you'll need to carry a lot of stuff. You'll need flashlights and paracord and knives and tarps and compasses and maps and food and water and dozens of other essential pieces of equipment in order to stave off any unfortunate situation that has chosen to ruin your day. But how are you supposed to carry it? In previous issues, we've discussed creating a backpack out of a pair of pants or a large sweatshirt, which is great for an impromptu pack but not very efficient. You need a backpack, stat.

There are a variety of different kinds of backpacks designed for an assortment of tasks, including arctic camping, alpine hiking, day hikes, emergency equipment, and more. Most of the multi-day backpacks intended for serious campers/hikers have internal or external frames for rigidity and increased carrying capacity. Slightly more versatile are the tactical packs. They offer a diverse assortment of styles and functions, all equipped with a bevy of pockets and pouches, tie-downs, webbing, and straps.

The beauty about tactical backpacks is that most of them were designed with the military or law enforcement in mind, and many were modeled from existing military pack designs. This means they are rugged, built to last, and cater to the survivalist mindset. There are pockets for magazines and water bladders, hard pouches for handguns and sensitive items, and flaps for antennae and water hoses. They're usually narrow and compact, able to fit between your shoulder blades to offer easy maneuverability and to be carried in a variety of ways (either shoulder, sling, suitcase, etc.).

When looking for a pack think about its purpose. Is it going to be a bug-out bag, a daypack, the foundation for an emergency kit, or is it just a pack you'll take to the amusement park with your family? Do you have a lot of small things that need specific room or things you'll need easy access to? Each pack here is unique in its own way and offers a wide range of possibilities and storage/carrying solutions.

Though they come in limited colors — coyote, black, multi-cam — and look rather similar, each pack is unique and was designed for an assortment of functions.



THE CLERK

The Clerk

At 18 inches tall, 11 inches wide, and 6 inches deep, the Clerk's best feature is a zippered writing desk that folds down from the front of the main pack. It features a plastic window pouch for viewing maps, while the organizer can hold a variety of office supplies while out in the field. The main compartment can handle 20.1 liters of gear. The pack is made with 1000 Cordura material to ensure it will last a long time. The two hard-shelled pouches on the front can hold sensitive items without being crushed in tight spaces. The webbing on either side can accommodate any number of MOLLE pouches.

Features:

- Padded pocket fits 15-inch laptops
- Pocket hydration bladders (up to 100 oz./3L).
- Padded mesh straps for breathability
- Full-width flip-down writing shelf with organizer
- Large handles for carrying or pulling
- MOLLE webbing for pouches
- Side compression straps

SOURCE hazard4.com

MSRP \$238.99



The Patrol

Larger than the Clerk, Hazard4 created the Patrol for longer trips in mind. At nearly 21 inches tall, 14.2 inches wide and over 9 inches deep, it can accommodate over 44 liters of gear in its six compartments, including the thermoformed hard-shell pouch on the top. It has a hydration pocket, padded straps, and a removable waist belt. The compression straps keep everything tight, while the multiple pouches and pockets keep things organized. It comes in black, coyote or multicam. The side webbing allows for expansion with MOLLE pouches, and the main handles (on the top, side and bottom) give the wearer different carrying options. The sternum strap keeps the back well centered.

Features:

- Padded pocket fits 15-inch laptops
- Hard pouch to protect sensitive items, etc.
- MOLLE webbing on sides and front
- Large organizer pocket for pens, lights, knives, etc.
- Removable belt
- MOLLE webbing on straps and belt

SOURCE hazard4.com

MSRP \$209.99



The Switchback

A great feature of this sling pack (it has only one strap to be worn over the shoulder) is that it can be worn on either shoulder as well as easily switch back and forth from the back to the chest (hence its name). It can carry over 20 liters of gear in its slender 18 x 11 x 6.2-inch size. Because of its size, it is easily maneuverable in crowds and the wearer can simply shift it sideways when sitting down. The many areas of webbing allow for expansion MOLLE pouches to be fitted on as well as a host of other gear. The loop pile on the face can be used for patches, and some of the zippers are protected from rain by leather loops. The front compartment drops down to form a shelf similar to the Clerk and the Patrol, only slightly smaller. The main compartment can accommodate hook and loop dividers to better organize your gear.

Features:

- Padded carrier fits most 15 inch laptops
- Can be used on the left or right side shoulder
- Padded strap
- Hydration pocket (for bladders up to 100 Oz./3L)
- Hydration-hose port
- Flip-down shelf-pocket with organizers
- Large handles for carrying or pulling
- Several internal pockets
- Webbing for MOLLE pouches etc.
- Sternum strap keeps bag from shifting
- Compression straps

SOURCE hazard4.com

MSRP \$188.75





Assault Pack

Made from 600 denier nylon fabric, this well valued three day pack is literally covered with webbing, allowing the wearer to add untold amounts of extra equipment for easy access. The main compartment of this pack (that measures 20 x 12 x 7 inches) takes up the majority of the pack's capacity. The padded shoulder straps are comfortable, as is the waist belt and foam padding on the back.

Features:

- Woodland digital
- Made of 600D polyester
- Large main compartment
- One outside zipper pouch
- Internal hydration panel
- Adjustable padded shoulder straps
- Sternum strap
- Adjustable waist belt
- Foam back support panels
- MOLLE attachments on front and sides
- Accessory loops

SOURCE campingsurvival.com

MSRP \$59.99



Expedition Rucksack

This is a quintessential daypack, which is why it is a featured element in our DIY daypack article on Page 80 of this issue. With a large main compartment closed by a traditional drawstring and secured by adjustable leather straps and brass clasps, the Expedition Rucksack exudes classic style. There are two decent-size outside pockets on either side of the main compartment. The canvas is rugged and the leather on the bottom will withstand years of use. It comes in brown (shown), OD, or khaki. Its dimensions are 16 x 13.5 x 5.25 inches, which makes a great size to carry a wealth of gear for a day hike or an easy overnighiter.

Features:

- Leather trim on lower front - 2 1/4" wide strip
- Leather buckle straps with brass hardware
- Large main compartment with drawstring closure and flap
- Flap with brass grommets and brass clasp closure
- One large pocket on the front of the bag
- One pocket on each side with hook and loop closure
- Top carry handle with real brown leather accent strip
- Padded, adjustable shoulder straps

SOURCE campingsurvival.com

MSRP \$36.99



Gear Guide | Backpacks

Combat Pack

Capable of holding 50 liters of gear in six different compartments, this large backpack comes in olive drab, black, or coyote. It features a very large main compartment with two mesh pockets and a series of straps to hold down and separate cargo. The front compartment has several accessory pockets capable of holding a variety of small gear. At 22 x 16 x 12, it is a large pack and can be used for multi-day activities.

Features:

- Secure-hold web straps
- Multiple accessory pockets
- Zippered hydration pocket
- MOLLE attachment points
- Two side pockets
- Heavy-duty zippers with pull-cords
- Padded backing
- Adjustable shoulder straps
- Removable back pad

SOURCE goprimalnow.com

MSRP \$69.95



Level III

The idea behind this VooDoo Tactical compact pack is to travel light and quick. The narrow pack (10 inches wide) fits squarely between your shoulder blades and lends itself to easy maneuverability through tight obstacles. The pack has two main compartments and two large exterior pockets for stowing gear you may need to access in a hurry. It is hydration bladder compatible, and has vertical and horizontal compression straps to help hold your gear in place. It also offers an adjustable waist belt and a web carry handle on the top. It comes in a variety of colors, including red.

Features:

- Dimensions: 18 x 10 x 10 inches
- Compact space
- Multiple compartments
- Compression straps, top/bottom and sides
- MOLLE webbing
- Adjustable waist belt
- Carry handle on top

SOURCE voodootactical.net

MSRP \$78.95



COMBAT PACK

LEVEL III

CONTEGO



Contego

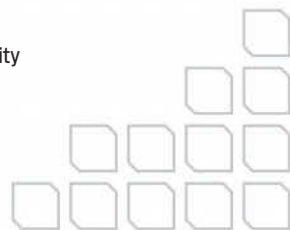
The name Contego stems from Latin meaning to conceal, and this pack, offered only in black, is part of their Elite line of tactical gear. The main compartment is large enough for a host of gear, while the side pouches can keep smaller items easily accessible. The medium pocket in the front has smaller pockets to keep personal items organized, and the top outside pocket is perfect for small items. The bottom of the pack is clad in a leather-like material for protection and drainage ports are included. On the front are elastic cords for stuffing jackets or extra clothes.

Features:

- Zippered fleece-lined pocket
- Reinforced handle
- Dual hydration hose ports
- Hook and loop patch
- Compression straps
- Adjustable sternum and waist straps
- Padded mesh back panel for breathability
- Webbing for MOLLE Attachments
- Front elastic cords
- Grommet drainage holes

SOURCE kilimanjargear.com

MSRP \$149.99



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Gear Guide | Backpacks

OPERATOR

Operator

The Operator can wear a wide range of hats, from a tactical backpack used to transport firearms to and from the range (or elsewhere) to a hunting backpack or an emergency bug-out bag. Made from 600 denier polyester, it can carry up to 40 liters of equipment in its five pockets and compartments. The side webbing and additional webbing on the front can increase the carrying capacity many fold. The strongest feature on this backpack is that it is water resistant, keeping your gear dry. Similar in features to the Contego, the interior front compartment hosts a bunch of secure pockets for smaller items.

Features:

- Heavy carry handles
- Hydration compatible
- Left and right hose/antenna ports
- Fleece-lined pocket
- Outer map/document pocket
- Compression straps
- Adjustable sternum and waist straps
- Contoured padded shoulder straps
- Padded mesh back panel for breathability
- Webbing for MOLLE Attachments
- Grommet drainage holes

SOURCE kilimanjargear.com

MSRP \$99.99



Mirati

A compact, well-sized multipurpose backpack, the Mirati is ideally suited for use as an easy carry pack, a patrol bag, hunting backpack, or hiking pack. It has dual main compartments for stowing gear that might be needed quickly. The compartment for a hydration bladder fits snugly against the back and has ports on either side for the hose (or a radio antenna). The side pockets are perfect for a magazine or two, while the compression straps keep everything secure. There is webbing along the back and elastic cords for softer gear such as a jacket.

Features:

- Dimensions: 18 x 13 x 11 inches
- Twin main compartments
- External hose port
- Reinforced grab handle
- 100 Oz./ 3 L hydration compatible
- Fits up to 15.4 inch laptop
- Hook and loop patch
- Side compression straps
- Adjustable sternum and waist straps
- Padded mesh Back Panel for Enhanced Moisture Wicking
- Padded mesh back panel for breathability
- Webbing for MOLLE Attachments
- Front elastic cords

SOURCE kilimanjargear.com

MSRP \$139.99





MIRATI

GLOBAL ASSAULT PACK

Global Assault Pack

At 25 inches tall and over 14 inches wide, this is the largest pack we've featured here. The huge main compartment can carry a lot of equipment, and features two interior mesh pockets. The top interior pocket has three cinch straps. The zippered front pouch also has two mesh pockets and a 5 x 5-inch loop pile for the attachment of extra gear. The side pouches are removable via button snaps, while the webbing can accommodate a host of MOLLE pouches or equipment. The shoulder straps and belt are both removable. The straps on the bottom can hold a sleeping bag, and the pack is hydration bladder compatible.

Features:

- Padded mesh back for breathability
- Padded adjustable and removable shoulder straps
- Removable back pad
- Top carry handle
- Multiple D-rings
- Interior cinch straps
- Webbing for MOLLE pouches
- Hydration bladder compatible

SOURCE campingsurvival.com

MSRP \$97.99



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THE ACRID DESERTS ARE TEEMING WITH FOOD

Story and Photography by **Christopher Nyerges**

The deserts of the United States are incredibly diverse in their flora. If you look at a map of the U.S., you'll see that some major areas are desert.

The Great Basin, for example, covers much of Utah and Nevada. There is also the vast expanse of the Mojave Desert, and the Sonoran Desert, which extends from Southern California south into Mexico.

There are certain plants that are largely restricted to the desert regions. Knowing some of the desert foods enhances your knowledge of how Native Americans once lived off the land, and might actually save your life one day.



CHIA (*Salvia columbariae*)

This is a low-growing annual member of the mint family. It has finely wrinkled leaves, with a square stem that rises no more than a foot or so. In about July, the seeds mature and these were gathered by the desert Indians and used as a high-protein food. In some years, it can be widespread in the large flat expanses of the low desert, and can be found even in the higher elevations.



No, these are not the same seeds that are now commonly sold in health food stores, though they are a close relative.

Chia seeds can be added to drinks and coffee, tossed into salad, or added to bread and cake batter.

ONIONS (*Allium canadense*)

These are always a treat when you find them in the desert or anywhere. There are varieties found only in the desert, and some varieties that are



found in the U.S. in nearly every environment.

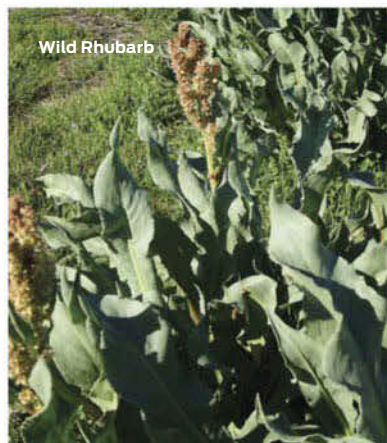
They look like little green onions, and they smell like onions. The flower has three sepals, and three identical petals, so it appears to be a six-petalled flower. Wild onions are widely used with meat dishes, salads, soups, stews, etc.

However, if you are not 100 percent certain you have an onion, don't eat it. Onions look very much like other members of the Lily family, and some members of the Lily Family are poisonous. The obvious onion aroma is one of the best ways to identify this wild desert plant.

WILD RHUBARB

(*Rumex hymenosepalus*)

Most people who see this for the first time think they are looking at a smaller curly dock (*Rumex crispus*), to which it is related. The leaves are sour, like curly dock, but tend to be too sour for use in salads. When you find the wild rhubarb plant, you can



collect some of the youngest leaves to add to cooked dishes. If you make a spinach-type dish from these leaves, they are best boiled, then change the water and cook again for a mild dish. The mature seeds can also be collected in late summer and can be added to bread batters or soup dishes.

MORMON TEA (*Ephedra* spp.)

Mormon tea is another widespread desert shrub that has the appearance



of leafless sticks. It is found in remote areas and along roadsides. The twigs can be brewed in water to make a pleasant beverage. The tea has many medicinal properties, chief among them being it helps to relieve difficult breathing conditions, such as from asthma.

JOJOBA (*Simmondsia chinensis*)

Jojoba is chiefly found throughout the Southwest deserts and into Mexico, and is a widespread shrub. It is widely known for the high-quality oil produced from its fruit. The fruit is usually ripening in the summer, when it should be harvested. The



seeds can be used as a nibble, as I've done many times. The desert Indians would grind and roast the seeds before making it into a beverage. Still other desert natives would make the jojoba flour into cakes, which they ate.

YUCCA (*Hesperoyucca whipplei*)

Various yuccas are widespread throughout the desert regions, and all have similar food properties – though my personal preference is the *Hesperoyucca whipplei*. The new shoot in spring can be cut and eaten, and it is best cooked. The flavor is



Yucca

like jicama. The flowers can be boiled and then seasoned, or added to flour and formed into paddies. Also, the young fruits are good boiled or roasted.

Yucca root, incidentally, which is sold in many markets, is NOT related to this desert yucca. Do not try to dig up the desert yuccas and eat the root, as you will be very disappointed.

CACTUS (*Opuntia* spp.)

Though any tender and palatable part of any cacti *could* be eaten, the member of the prickly pear group is generally the best. The young pads are cleaned of their spines and glochids, and can be eaten raw, or added to stews, omelets, and other dishes. I have used these young pads for water when I had none. The fla-



Cactus



Mesquite



vor of the raw pad is like a sour green pepper.

The fruits are edible too, but you have to be careful when collecting so you don't get the glochids all over your skin. I used metal tongs, and then I burn the spines off each fruit.

MESQUITE (*Prosopis glandulosa*)

Mesquite plants are widespread throughout the Southwest deserts, often growing thickly along the rivers and roadsides. The plant has a ferny appearance and spines on the stalk. The fruits hang from the plant in early summer, appearing like yellow beans.

These can be eaten when mature, spitting out the seeds. The desert natives enjoyed grinding up the entire pods and using the meal for sweet flour to make drinks, cakes, bread, etc.

PALO VERDE

(*Parkinsonia microphylla* and *P. florida*)

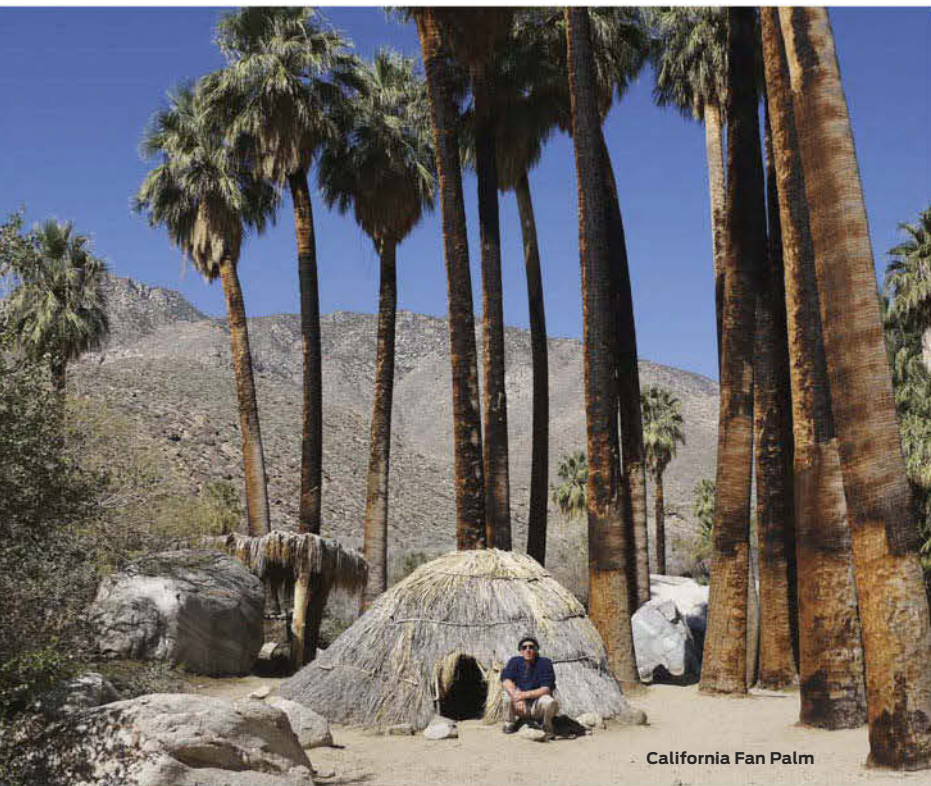
The palo verde tree is another widespread shrub from the Southwest, which has gained in popularity as a landscape tree. Gardeners like it because it is drought-tolerant, and produces beautiful yellow flowers in the spring.

The seeds from the pods were collected in summer by desert Native Americans and ground into a flour that was used for porridge, cakes, or biscuits.



Palo Verde





California Fan Palm

CALIFORNIA FAN PALM

(*Washingtonia filifera*)

Though there are many palms now growing throughout the United States, the only native to the deserts is the California fan palm. The Cahuilla people from the Palm Springs area used just about every part of the palm tree for shelter, fire, weaving material, sandals, food, and more.

The small black fruits have a hard seed surrounded by the sweet thin flesh. You can chew the flesh off these fruits and spit out the seed. Or you can boil the entire fruit, producing a sweet juice that you drink, or use to sweeten other foods.

Desert natives would also grind the entire fruits into a sweet meal that was used by itself to make cakes, or added as a sweetener to other foods.

INDIAN CABBAGE

(*Caulanthus inflatus*)

Sometimes I do not see this plant for several years if the rain is not sufficient. It is an annual member of the



Indian Cabbage

mustard family whose leaves are a bit tough and strong-tasting, and should be cooked once or twice to make it palatable.

One of the distinctive features of this plant is the hollow stem. When the plant matures and the stem breaks off, the wind makes a distinctively-eerie sound blowing over the hollow stalks. ■■■

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Chilling Comfort

COLD STEEL'S VERSATILE SURVIVAL KNIFE

Story and Photography by James E. House



Since the earliest times, mankind has exploited the utility of a sharpened blade and been comforted by its presence. Originally made of stone, blades were later made of copper, bronze, and iron as technology developed. Eventually, ways were found to prepare alloys and to perform heat treatment to make edged tools and weapons of superior quality. Those efforts continue to the present, and Cold Steel's versatile Survival Rescue Knife is a great example of the ever-improving blade.

The "survival" knife is one of the most popular types of knives and you can rest assured someone living centuries ago would have been very happy to have one. Such a knife should be able to cut foliage or poles for shelters, make kindling, cut rope or cord, dress game and prepare food. The general characteristics should include a sturdy blade, ability to maintain sharpness, good handling qualities, and durability in a variety of environments. Although some so-called hunting knives would suffice for most tasks, many people believe a survival knife should be something more special. Let's dig into Cold Steel's SRK to see how it measures up.

The Cold Steel SRK has the size and strength required to perform survival tasks well.

"THIS KNIFE HAS A 6-INCH BLADE MADE OF JAPANESE AUS 8A STAINLESS STEEL THAT HAS A BLACK COATING COLD STEEL CALLS BLACK TUFF-EX."

COLD STEEL'S NUMBERS

I have several knives but none is more suitable than the Cold Steel Survival Rescue Knife, or SRK. This knife has a 6-inch blade made of Japanese Aus 8A stainless steel that has a black coating Cold Steel calls Black Tuff-Ex. At the spine, the blade measures 3/16-inch in thickness (mine measures slightly more) and it has a clip point configuration with no serrations.

THE BLADE

The full length tang is covered in the handle section with a textured rubber-like material called Kray-Ex. It is configured to provide what to me is a comfortable handle and it almost exactly matches that of my old Cold Steel Master Hunter. The grip is somewhat rounded in the mid-section and flares slightly at the pommel. The top and bottom surfaces of the grip are ridged whereas the sides are deeply checkered. Near the butt of the grip is a brass-lined hole that can be used to attach a lanyard. Altogether, the grip of the SRK is about as comfortable as a handle can be, and it works well wet or dry. There is no jimping on the blade, but with the handle having such a "grippy" surface, it is not likely to be needed.

The overall length of the SRK is 10-3/4 inches and the knife weighs 8.2 ounces, but it feels very quick and light in the hand. One reason is the knife has a balance point located almost exactly at the forward end of the handle. As a result, exactly half of the weight of the knife is in the hand and the other half is just forward of that point. When I first handled a Cold Steel SRK I was immediately aware of how different it felt compared to some of my other large, heavy knives.

Specifications

Blade length: 6 inches
Blade thickness: 3/16-inch
Composition: Japanese Aus 8A
Coating: Black Tuff-Ex®
Overall length: 10.75 inches
Weight: 8.3 ounces
Handle: Kray-Ex®
Sheath: Secure-Ex® polymer

A heavy clip point blade is well-suited for tasks in remote places. This blade is capable of withstanding batoning.

A hole for attaching a lanyard is conveniently located in the handle.

The finger guard also is rubber-coated which adds to the overall comfortable feel of the handle.

The Kray-Ex grip on the SRK provides a secure grip under virtually all conditions. It is much more comfortable than grips made of slick polymers or finished wood. Configuration of the gripping surface is slightly contoured in order to assure comfortable use and control.



Chilling Comfort



Complementing the SRK is a rigid, versatile sheath. It provides numerous points for attaching implements and both friction and loop knife retainers. Although there are no serrations or jimping, the Cold Steel SRK provides the necessary attributes for an excellent survival knife at an economical price.



Although specified as $\frac{3}{16}$ inches the blade measures 0.199 inches in thickness, making it a very strong blade.



The balance point of the SRK is almost exactly at the front edge of the handle.

THE SHEATH

A survival knife needs a sturdy sheath and the Cold Steel SRK is provided with one. The sheath consists of two parts. The bottom part that houses the blade is made of a rigid (make that very rigid) polymer that Cold Steel calls Secure-Ex. The top part of the sheath, which is attached to the bottom part by two screws, is made of heavy woven fabric. The knife is held securely in place by two ridges that slip over the forward section of the handle as the knife is inserted. To really secure the knife, a woven retainer with a snap closure circles the handle. Knowing users of survival knives like to attach small items of equipment to the sheath, Cold Steel made the blade housing sufficiently wide to accommodate 10 holes and four slots. This design makes attaching small objects or lacing with paracord a simple process.

BOTTOM LINE

The Cold Steel SRK is heavy and large enough for hacking, sturdy enough to baton, and nimble enough to make fine cuts. What more do you need? **ASG**

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Gear Guide

FIRST AID

First Aid KITS

Pre-packed First Aid Kits Ready
for When You Need Them

Story by Michael D'Angona

Time is a valuable commodity that most people just don't have. Assembling your first aid items piece by piece is not always a viable option, yet you need to be ready when and if disaster strikes. Luckily, there are numerous emergency kits on the market; pre-filled with important essentials to help you endure when injuries and medical mishaps occur.

These kits range in purpose from basic first aid, to suture and deep wound repair, to full campsite injury supplies for your entire outdoor group. A pre-packaged first-aid kit should have all the essentials needed to tend to bodily injuries and internal discomfort that may occur in your specific environment. Deep woods travel, for example, must have insect bite and sting ointments, while in a marine location, aloe lotions and balm should be included to protect you from the sun's powerful rays.

While choosing the proper kit for your needs, be sure to read the contents list carefully. Locate the items that you need and more importantly, those you don't. A kit should have additional room inside for items specific for your personal needs, including medications or items you just can't live without. Expiration dates should be well into the future, giving you peace of mind for months and sometimes years to come. When all items meet your approval, buy the kit and be prepared for an uncertain future.



Tactical Surgical and Suture Kit

First Aid kits are no doubt a necessity for every bug-out bag or emergency kit. But what if you or a family member endures a very serious bodily injury? You may have to apply some basic surgical or suturing techniques, and this kit will help get you through it. Containing fresh dated hospital grade instruments and a vast array of accessories, this kit is the real deal when patching up jagged or deep puncture wounds is required. The kit features surgical stainless steel scalpels, scissors, and forceps and a variety of sutures, wound closure strips, antiseptic wipes, alcohol pads and a curved 5" hemostat. Its tri-fold case allows for easy storage and accessibility. A necessary complement to any multi-person first aid kit!

SOURCE Nitro-Pak.com

MSRP \$55.99



First Aid Comprehensive Kit

This "Jack of all Trades" kit's features contents useful for nearly every medical emergency or injury that you may face in any environment. With over 210 items ranging in use from essential basic first aid applications, to wound management, to burn care, this kit covers the entire spectrum of injury treatments. It contains items necessary to tackle excessive bleeding, fractures and sprains, dental issues and those seldom touched on medical issues, such as CPR, Insulin shock, dehydration, allergies and much more. A 217 page essential guide to wilderness & travel medicine is included for reference when out in the field. All items are packed in an easy to use tri-fold pouch with quick-view clear compartments. Recommended for just about everywhere including churches, businesses, camping expeditions, group events, weekend getaways, bug-out locations and more!

SOURCE Nitro-Pak.com

MSRP \$169.99



Easy Care Outdoor and Travel First Aid Kit

Outdoor fun shouldn't be ruined from a simple injury that you can't treat. With the Easy Care Outdoor Kit, this won't happen. Equipped with all the basic items you need to treat outdoor injuries including scrapes splinters or minor cuts, you won't have to stop your activities when minor mishaps occur. This kit features over 50 first aid items including multi-sized bandages, antiseptic wipes, antibiotic ointments, sting relief pads, tweezers, gauze and two types of pain relief medications to help bear the pain and allow you to continue your outdoor adventures. This is the perfect kit for outdoor BBQ's, picnics, and fun-filled days at the park.

SOURCE AdventureMedicalKits.com

MSRP \$6.99



Marine 1000

If you spend the majority of your time on or around the water, then this first aid kit should be a must-have. Specifically designed for marine-type injuries, this comprehensive assortment has everything you need to treat injuries until help can be reached (max. 12 hour avg.). It features items that aid with CPR, the cleaning and closure of wounds, preventing hypothermia and shock, and stabilizing fractures or sprains encountered on the open sea. It's equipped with a blood pressure cuff, digital thermometer and stethoscope so you can keep a close eye on the victim's vital signs. The entire kit is organized into injury-specific pockets, so those with absolutely no medical experience can administer needed care easily and quickly. An indispensable addition to your boat, waterside cottage or deep sea vessel.

SOURCE AdventureMedicalKits.com
MSRP \$340

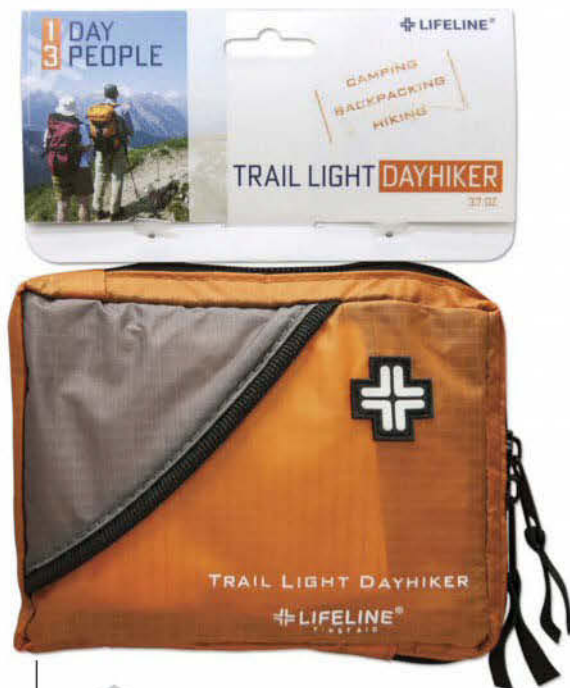


Base Camp First Aid Kit

Over 170 first aid items make up this extensive kit. Ideal for campsites or multi-person outdoor outings, you will have everything you need to treat a wide variety of injuries that may occur in the great outdoors. Contained within its durable and highly visible bag are dozens of useful medical supplies including scissors, adhesive tape, cold packs, gauze, bandages of all sizes, and cooling burn gel. Antiseptic wipes, and ointments will keep your injuries bacteria-free and its included pain-relieving tablets will ease the discomfort. The included first aid booklet gives you tips and instructions to patch up your mishaps and allows you to get back into the action fast. No outdoor trip should be without this necessary supply.

SOURCE lifelinefirstaid.com
MSRP \$39.99





Trail Light Dayhiker

Lightweight and compact, yet it's filled with enough supplies to treat up to three people during a day hike or other single day outdoor activity. Weighing only 3.7 ounces, this extremely easy to carry kit goes everywhere your adventure takes you. It's equipped with all the basic essentials of first aid including bandages, gauze, alcohol pads, and adhesive tape and more. Insect problems? Essential sting relief, antibiotic ointment and pain relievers will put a quick stop to them. Safety pins, vinyl gloves, tweezers and first aid guide book assist while performing simple first aid techniques. The durable, rip-stop bag keeps all your items contained and safe from the ever-changing elements of the outdoors. 57 piece kit.

SOURCE lifelinefirstaid.com

MSRP \$9.99



AAA Commuter Kit- \$24.99

Some accidents or injuries occur on your way to your final destination, and administering first aid is a very real necessity. The AAA Commuter Kit has just what you need in the form of wound-closing bandages, antiseptic towelettes, multi-sized gauze pads and alcohol pads to keep everything germ and bacteria free. Any injury can get far worse if left unattended and with this convenient vehicle kit, you can tend to injuries quickly and efficiently. Its hard-shell case prevents damage to the contents and its included carabiner allows for hanging from bicycle frames, backpacks, or anywhere you need convenient first aid. 85 total pieces including an indispensable, life-saving emergency whistle.

SOURCE lifelinefirstaid.com

MSRP \$24.99



EMS Emergency Responder Pack

First aid supplies scattered all over your house or thrown carelessly in your supply bag does very little good when an accident occurs. Keep your needed goods organized and contained within this high-quality Emergency Responder Pack. Used by ambulance, helicopter, and other specialized search and rescue teams, this kit features four interior color-coded window pockets, three medium exterior pockets, one large hidden pocket for personal supplies, and three small interior pockets that hold all your small items perfectly. These strategically designed pockets reduce equipment loss and color coding and clear windows allows rapid access to all your needed supplies. The ladder frame doubles as a splint in a pinch.

SOURCE thomasems.com
MSRP \$110



Wall/Vehicle Mount First Aid Kit

This general purpose first aid kit is built tough and designed to be mounted wherever you need fast access to basic medical supplies. The USA made military-style box is watertight and constructed of hard-shell metal. Inside are all the essentials needed to handle cuts, scrapes, bites, burns, or whatever nature throws at you. Don't let first aid be an after-thought. Mount this kit and have peace of mind if and when it comes time to use it. Perfect for your bug-out vehicle or auxiliary bug-out location.

SOURCE NotIfButWhenSurvivalStore.com
MSRP \$19.95



Radnor First Aid Cabinet (25 Person)

The perfect balance between portability and durability, this first aid kit has enough needed medical supplies to handle basic first aid for over two dozen individuals. Its three-level design organizes all materials and allows for quick identification and easy access when an injury occurs. It's constructed of durable metal with a white powder coat that slows rusting and offers very minimal maintenance over the years. The kit includes products to treat burns, major bleeding, eye injuries, minor cuts and abrasions and many other medical injuries that can happen during emergency conditions. Lightweight and packed tight to conserve space, it is the perfect kit to mount in your alternate bug-out shelter, or home-based panic room.

SOURCE MorePrepared.com
MSRP \$125



**Explorer First Aid Kit**

Carefully selected products and dedicated personal assembly differentiates this kit from many others. Included are over 75 pieces and 35 unique pieces chosen to be included in your all-inclusive go-to first aid pack. The military style MOLLE trauma carrying pouch is constructed of heavy duty material, yet is compact enough to fit or store just about anywhere. Inside you will find all the necessities of basic first aid, useful in any temporary emergency situation. These include bandages of all sizes and uses, tweezers, scissors, antibiotic ointments, burn gels, anti-itch cream packets, gauze, a splinter-out tool, finger splints and more. Convenient extras, not always packed in many kits include safety pins, razor blades, poison ivy cleanser, and orthodontic wax. A basic first aid instruction sheet aids in the application of techniques for those with no medical experience.

SOURCE [UncleFlints.com](#)

MSRP \$54.95

Bug Out First Aid Kit (BO-FAK)

Don't be caught out in the field without a medical kit. Injuries and accidents can happen in an instant and without the necessary supplies, you run the risk of infection or serious long term issues. With the Bug-out First Aid Pack, you can treat minor injuries quickly and efficiently, on-site. The camo-designed pouch features MOLLE straps which make it easy to attach and to always have nearby when an accident occurs. All the essentials are included in this convenient kit including, bandages, gauze, alcohol wipes, iodine wipes, first-aid cream, and triple antibiotic ointment. Useful scissors, tweezers and latex gloves make this kit all-inclusive, so you don't have to search through your primary bag for these essential tools. Comes complete with a helpful EFA First-Aid booklet that provides insightful information and How-To instructions.

SOURCE [NotifButWhenSurvivalStore.com](#)

MSRP \$21.95



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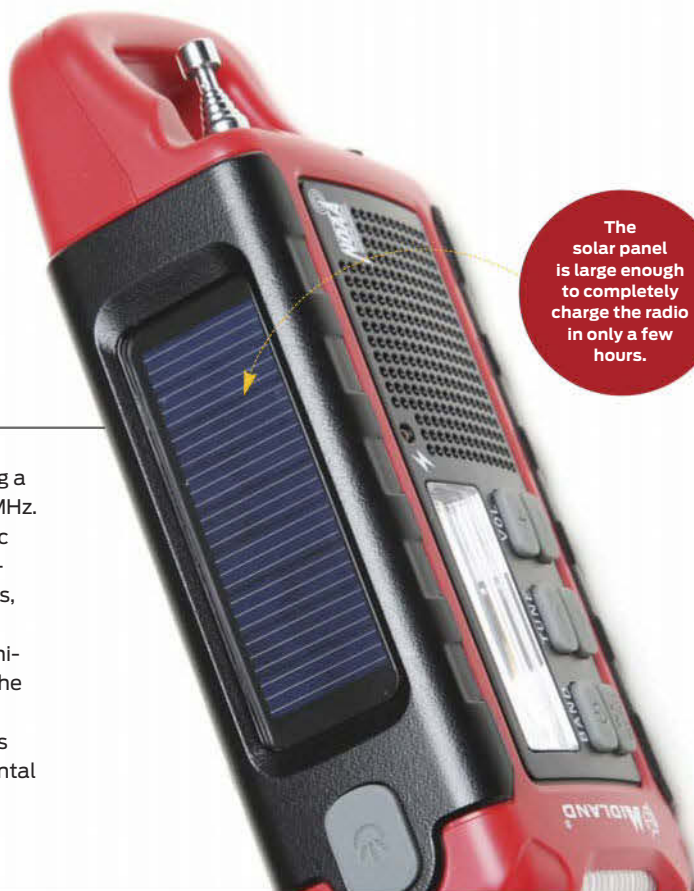
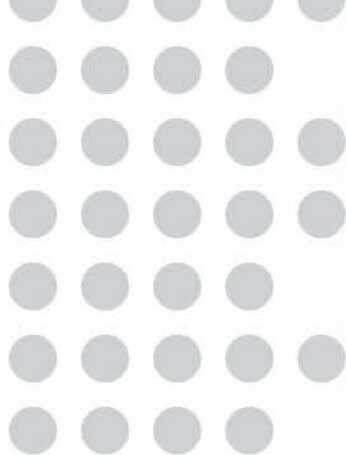
Get the 411

MIDLAND ER200 EMERGENCY CRANK WEATHER RADIO

Story and Photography by **Justin Smith** | Additional Photography by Henry Z. DeKuyper

Being lost in the woods or the desert is never a pleasant experience. Fear, panic, anxiety, and distress are just a few of the emotions that will flood through your mind as you try to figure out a safe plan to expedite your rescue. You might be able to discern the immediate weather by merely looking onto the horizon for obvious signs of change — clouds, wind, fog — but what about tomorrow? The weather patterns of many remote locations change at the drop of a hat. On one side of the mountain are rainstorms, while the other side is clear as a bell. To remove all doubt about what will be in store for you — whether you're in an emergency deep in the brush or while sitting on your couch — having reliable information at your fingertips is essential. The Midland ER200 emergency crank weather radio can help.





The radio has seven preset channels spanning a frequency band between 162.400 and 162.550 MHz. These are the National Oceanic and Atmospheric Administration (NOAA) weather channels (WX1-WX7), broadcasting warnings, watches, forecasts, and other weather observations and hazards 24 hours a day. Partnered with the Federal Communications Commission's emergency alert system, the National Weather Service also broadcasts non-weather emergencies via these channels, such as national security threats, natural and environmental emergencies, and public safety issues.

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The seven pre-set WX weather bands are easily accessible, and it will alert you to a weather incident via a tone and the LCD display.

The ER200 also features the traditional AM and FM frequencies, and this compact radio has a very clear reception of local radio stations. This device also provides a Cree LED flashlight with high and low beams, and an SOS flash setting. The high beam provides 130 lumens of light. You won't have to worry about running out of batteries because the ER200 can be charged by the attached solar panel on its top, from any USB port, or by cranking an integrated handle on the back. The included cable even allows you to charge smartphones and tablets using the radio's rechargeable (and replaceable) 3.7 VDC Lithium-Ion battery.

At 6.5 x 2.8 x 1.9 in size, it is compact enough to earn space in any emergency pack or with your regular camping gear. **MSRP**

When the battery is dead, a few minutes of cranking will replace enough power to return the radio to life again.

The telescoping antenna ensures a clear signal of not only the local NOAA weather stations but local AM/FM stations as well.



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Cooking

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HOW TO MAKE
A SOLAR OVEN

Story by **Larry Schwartz**

Much like high school science fair projects are based on simple principles of physics, solar ovens take some of those same simple principles and turn them into something useful and inexpensive. People all over the world use the basic concepts of radiation, convection, insulation, and reflection to create solar ovens and cookers that they use to feed themselves and their families when fuel for cooking is hard to find or non-existent. And you can too.

THREE BASIC DESIGNS

There are three basic designs for solar cookers, box, panel, and parabolic. The parabolic is the most expensive and difficult to make as it requires curved surfaces and an apparatus to hang your cooking vessel in to the middle of the solar cooker. Box cookers use two boxes, one slightly smaller than the other which serves as a cooking chamber which is heated by solar radiation reflected onto it by reflectors on the outer box. Panel cookers take their name from the reflective panels set up around your cooking pot to focus sunlight onto the pot so that it can cook.

WHAT DOES A SOLAR COOKER NEED?

In order for you to use a solar cooker effectively you need some prerequisites:

- ✓ You need to be somewhere that is bright, sunny, and clear most of the day.

- ✓ You need to be in the middle latitudes so the sunlight is coming in at less of an angle than it does closer to the North and South Poles.
- ✓ You need to do your cooking during the middle of the day, from 11:00 a.m. to 3:00 p.m., when the sunlight is at its greatest intensity.

BUILDING A BOX COOKER

To build a box style solar cooker you will need two boxes, one smaller than the other, glue, tape, a knife, aluminum foil, newspaper or other insulating materials, clear plastic wrap or a pane of glass or clear plastic. Then follow these steps:

- > Cut the top flaps off of the medium-sized square box. The box should be an inch or two wider and taller than the cooking vessel you will be using. This will be your cooking chamber.
- > Glue aluminum foil, shiny side showing to the inside walls of your cooking chamber. This will reflect more solar radiation onto your cooking vessel.
- > Place a dark colored pan, like a dark metal cooking sheet, in the bottom of the cooking chamber to absorb the reflected solar radiation and to help heat your cooking vessel.

"PEOPLE ALL OVER THE WORLD USE THE BASIC CONCEPTS OF RADIATION, CONVECTION, INSULATION, AND REFLECTION TO CREATE SOLAR OVENS AND COOKERS THAT THEY USE TO FEED THEMSELVES AND THEIR FAMILIES WHEN FUEL FOR COOKING IS HARD TO FIND OR NON-EXISTENT. AND YOU CAN TOO."





A



B

Solar Oven BASICS

For a solar oven to work properly, it needs an outdoor space in direct sunlight. The goal is to convert the light into heat, and that is done best when using black materials, such as the pot, to retain the heat near the food. Around the food, place a transparent heat trap that allows in light but keeps heat from escaping. Extra sunlight can be directed to the heat trap via reflective surfaces.



C



D



E

- > Next, take a larger square box, approximately one or two inches wider on each side than your cooking chamber, and cover the flaps on its top with aluminum foil, shiny side toward the inside of the box. If the flaps are not the same size, cut off one of the shorter ones and tape it to the other short ones so that it is the same size as the other two.
- > Place your cooking chamber into the middle of your larger box and fill the space between the two boxes with insulating materials like rolled up or crumpled newspapers or foam insulation. This will help to keep the heat inside of the cooking chamber.
- > The last piece of your box cooker will be the clear plastic wrap or clear plastic or glass “window” that will go on top of your cooking chamber to seal in the air as it is heated by the solar radiation.

- A.** Many commercial models allow you to rotate the cooker on its axis to point it directly at the sun. This feature can be incorporated into the home-made solar cooker very easily for most of us.
- B.** Box cookers can have a single reflector like this model or multiple reflectors. The more reflectors you have the better able you are to focus the sun's rays on to your cooking vessel.
- C.** You can make a box cooker from something as simple as a pizza delivery box. A great size for making s'mores or cooking eggs.
- D.** With the infrared light not allowed to escape and constantly reflected back into the cooker, the temperature of the oven begins to rise sharply, enough to cook an egg.
- E.** A multi-paneled cooker directs the sunlight from four different panels, effectively ushering in much more light than a simple box cooker.

Once your box cooker is complete, and the sun is at the right position in the sky, you can start cooking. Place your food in a dark, thin-walled cooking vessel that has a lid. Then place it in the center of your cooking chamber. Then seal the cooking chamber with your glass or clear plastic film to keep the air in as it gets heated by the solar radiation.

Next, place the solar cooker in the sunlight so the sunlight shines into the center of the cooking vessel. Adjust any reflectors you have added to your cooker so they shine more light down into the cooking chamber.

You should check your cooker every 30 minutes or so to ensure the sunlight is shining into the cooking chamber. If it is not, due to the movement of the sun across the sky, you should move your cooker so it again is facing toward the sun and adjust your reflectors as needed. If the sun is low in the sky, such as early in the morning or late in the afternoon you should position the cooker so the reflector can catch the rays of the sun and shine them back down onto your cooking vessel.

BUILDING A PANEL COOKER

A panel cooker is even easier to make than a box cooker; all you need to do is make reflector panels and tape them together.

- > Take a large cardboard box, approximately twice the height of the cooking vessel you will be using, and cut out the sides.
- > Cut one side into a trapezoid and then use it as a pattern to cut the other sides into the same shape.
- > Tape the pieces of the bottom of the box together to make one sheet of cardboard.
- > Glue aluminum foil, shiny side up, to each of the trapezoids and to the piece of cardboard made from the bottom. These are your reflectors. The piece from the bottom is what you will put the cooking vessel on.
- > The final step is to attach the three or four trapezoids together by running tape along the edges on the side without the aluminum foil on it.

Your reflector panels will now stand by themselves angling away from the cooking vessel so they can better reflect the rays of the sun onto it. You can adjust the angle of the reflectors by moving the outer panels in or out.

When the sun is in the right position in the sky, prepare your food just like you did for the box cooker. Since this design does not have a glass or plastic wrap window to trap the hot air in with the cooking vessel you will need to put your cooking vessel in an oven cooking bag, like the ones used for cooking a turkey or roast in the oven. Then place the cooking vessel on the middle of your bottom reflector and position the



IMAGE BY LARRY SCHWARTZ

Panel cookers use easy to construct and lightweight reflector panels that are easy to use to focus the solar radiation onto your cooking vessel.

three or four trapezoidal reflectors around the cooking vessel so the sun is reflected onto the cooking vessel. Like you did with the box cooker, you should check your cooker every 30 minutes or so to ensure the sunlight is shining into the cooking chamber, although with this design you can likely get away with only moving things once every hour. **ASB**

Solar Oven Manufacturers

The following companies make reputable solar ovens and cookers:

Solar Cookers International: solarcookers.org | Sun Oven: sunoven.com | Sun Stove: gosunstove.com

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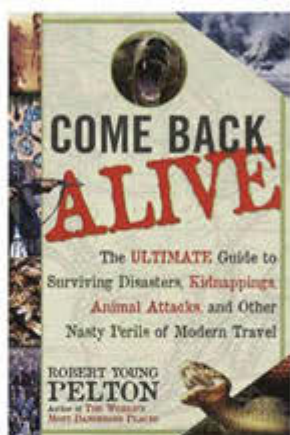
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“Come Back Alive”

by Robert Young Pelton | Review by J.D. Hughes



PUBLISHER: Main Street Books
PAGES: 304 (paperback)

“...THE VAST MAJORITY OF THE GREAT SURVIVAL STORIES INVOLVE **SOMEONE DOING SOMETHING INCREDIBLY STUPID**, THUS BEING FORCED TO HEROICALLY SURVIVE AND BE RESCUED BY THE EXPENDITURE OF VAST SUMS OF TAX DOLLARS AND THE TIRELESS EFFORTS OF DOZENS OF VOLUNTEERS.”

Robert Young Pelton makes no bones about it. Statistically, we are much more at risk of death and injury from the mundane than from the exotic. You are more likely to die in an accidental fall in the bathroom, or a freeway collision than by mishap in the wilderness.

Pelton is notorious among journalists. Not one to sit by and wait for the Pentagon to give him access, Pelton embedded himself with Northern Alliance Warlords and U.S. Special Forces during the initial phase of the war in Afghanistan. For his book “Licensed to Kill: Hired Guns in the War on Terror” he spent time with both Blackwater Operators and Iraqi insurgents. He’s even survived an assassination attempt in Uganda. His most well-known book is “The World’s Most Dangerous Places” and it’s a bestseller, regularly updated, and at one time the basis of a popular show on the Travel Channel. It’s his practical guide to survival in high risk zones. But of greater interest to the slightly less adventur-

ous is “Come Back Alive: The Ultimate Guide to Surviving Disaster, Kidnapping, Animal Attacks, and Other Nasty Perils of Modern Travel.” Unlike some well-known televised experts, Pelton doesn’t emphasize the dangers of the wild unknown, instead he points out the obvious.

The book makes a logical and practical progression from psychological self-evaluation (what sort of adventurer are you?), to details on exposure, with chapters on both hypothermia and heat. The book finishes on the most mundane of travel dos and don’ts — the packing list. You’ll find advice on self-defense, disasters, travel in war zones, even a chart listing bug protein by percentage of weight. The chapter on the myth of survival points out the vast majority of the great survival stories involve someone doing something incredibly stupid, thus being forced to heroically survive and be rescued by the expenditure of vast sums of tax dollars and the tireless efforts of dozens of volunteers. If the partici-

pants of the TV show “Survivor” read this book they would likely be less miserable, more cooperative, and far less dramatic.

Pelton is practical. On self-defense his advice can be boiled down to run or carry a weapon. On the subject of weapons, rather than dwelling on personal defense, Pelton describes what to expect during your travels in the less desirable tourist destinations. The kinds of places where people use AK-47s as directional pointers or celebratory noisemakers.

Reading Pelton is like sitting at the knee of the proverbial old-timer as he shares his wisdom; he’s a little grumpy, and likely to give you the stink eye for asking a stupid question, but you can take his advice to the bank, or in this case to a stinking third world hellhole with a reasonable chance of coming back in one piece.

“Come Back Alive” is a travel guide, but this does not, however, make the advice and instruction any less helpful to those who never leave their hometown. ■■■

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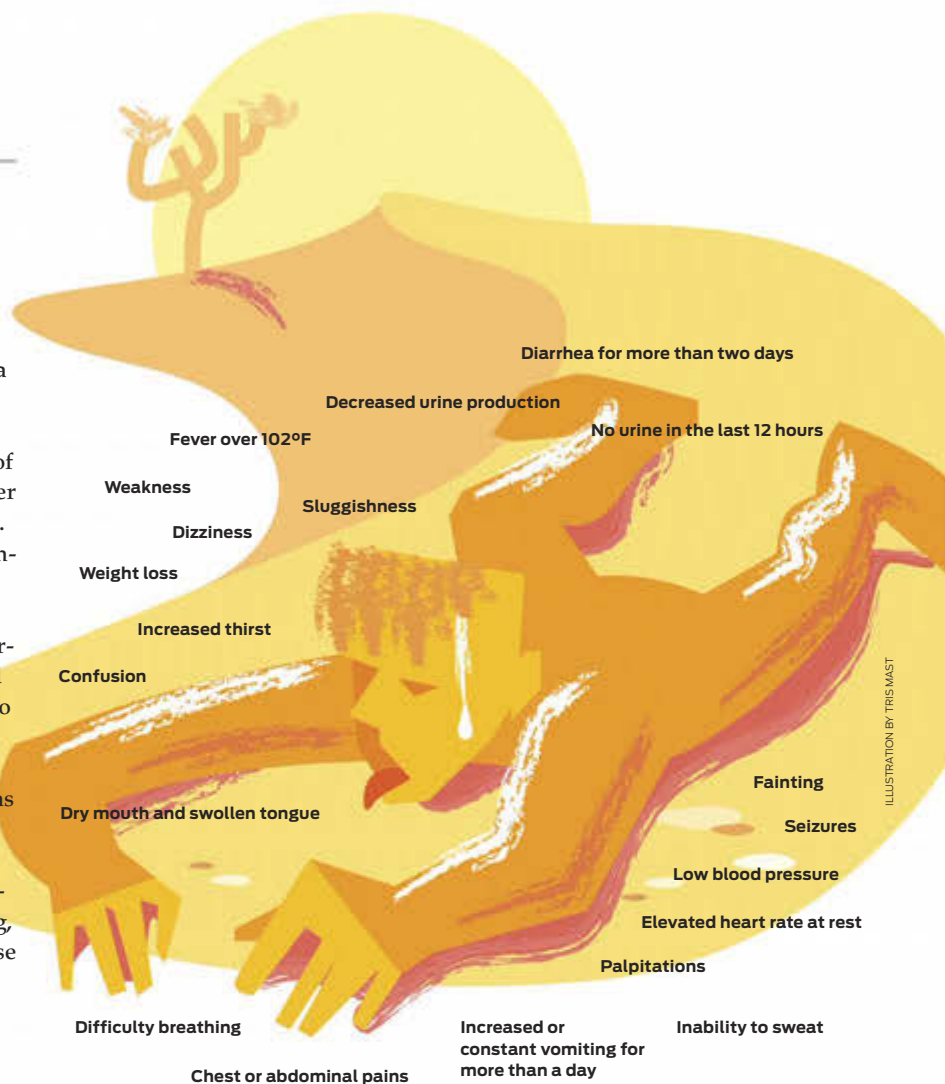
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Death from Dehydration

Probably the strongest physical desire a human being has — greater than shelter, food, and love — is the need for water. One can live without food for a number of days, weeks, even, but to be without water for even a couple of days is certain death. Death by dehydration is a confusing, complicated, and particularly uncomfortable way to meet your end.

Because the body is comprised primarily of water (around 60 to 70 percent) and it needs water for every bodily function to work properly, the human body must receive more water than it uses over the course of a single day. Unusual conditions such as fever, heat exposure, too much physical activity, and injuries, like skin burns, all cause water loss, but so do normal bodily functions: sweating, breathing, digesting food, and expelling waste. These lead to dehydration that regular water intake will easily cure. But what if water isn't present? In the Atacama Desert in South America, it rains only 0.03 inches per year, not enough to sustain human life for very long if you didn't bring your own water with you.

When the water supplies dry up, the body needs to keep the vital organs (brain, heart, lungs) from drying out, so it begins to remove water from cells and put it into the bloodstream. Jeffrey Berns, a nephrologist at the University of Pennsylvania explains: "All the cells will shrink, but the ones that count are the brain cells. They don't operate normally when they're shrinking. Changes in mental status will follow, including confusion and ultimately coma. As the brain becomes smaller, it takes up less room in the skull and blood vessels connecting it to the inside of the cranium can pull away and rupture. Without water, blood volume will decline and all the organs will start to fail." **AND**



How to **PREVENT** Dehydration

- > Replace fluids at the rate they are lost. Plan ahead and take extra water. Don't wait to feel thirsty before you drink something.
- > Avoid exposure to the sun during the hottest part of the day.
- > Alcohol consumption increases water loss and impairs your ability to notice and react to the need for fluids.
- > Wearing light colored and loose fitting clothing will reflect the sun and create a space of cooler air between the clothing and your body.
- > Exposure to the sun and dehydration is cumulative. Breaking that cycle, even for an hour or so, will drastically reduce the effects of heat exposure.

How to **TREAT** Severe Dehydration

- > Sports drinks are a great way to replace electrolytes.
- > Have the person drink as much water he/she can (even if vomiting).
- > Suck on ice chips or popsicles made from fruit juices.
- > Remove the victim from the source of heat (sunlight, et al)
- > Shed any excess clothing.
- > Place a wet towel or blanket over the person.
- > Place them in a bathtub of cool (not cold) water.



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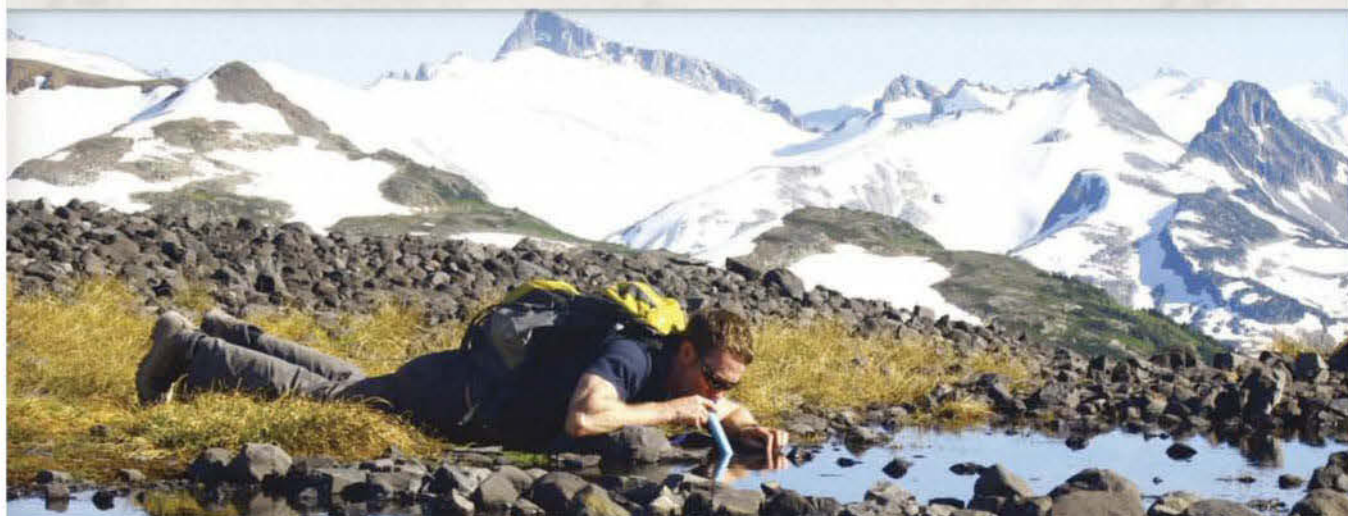
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